Report

Facility Wide Baseline Evaluation and Release Assessment Addendum Report

RCRA Corrective Action Program
Facility Lead Program
EPA ID VAD003175072

BAE Systems Norfolk Ship Repair
Norfolk, Virginia

December 2008

O'BRIEN & GERE

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1. Introduction

In August 2005, the United States Environmental Protection Agency (USEPA) invited BAE Systems Norfolk Ship Repair (Norfolk Ship Repair) to participate in a RCRA (Resource Conservation and Recovery Act) Corrective Action Facility Lead Program. BAE Systems Norfolk Ship Repair (Norfolk Ship Repair) accepted the USEPA invitation to participate in the Facility Lead Program by submitting a Letter of Commitment to the USEPA on September 20, 2005. The Letter of Commitment obligates Norfolk Ship Repair to meet the requirements of RCRA, enacted by Congress in 1980 and is administered in lieu of a RCRA Corrective Action (CA) Permit or Administrative Order of Consent.

In December 2005, Norfolk Ship Repair submitted a RCRA Facility Investigation (RFI) Work Plan, prepared by O'Brien & Gere Engineers, Inc. (O'Brien & Gere). The RFI Work Plan describes the process by which the RCRA Corrective Action Program will be implemented. The RFI Work Plan was developed as a "Master" work plan, that presents the protocols and proceedings by which site activities, investigations, and program efforts will be conducted. The RFI Work Plan also documents the strategies, objectives, and goals of the facility's CAP. By establishing the means, protocols, and procedures by which corrective action efforts will be conducted, regulatory approval, scope of works, and schedules can be streamlined and facilitated throughout all phases of the Corrective Action Program. The RFI Work Plan was submitted to the USEPA in December 2005 for review and approval. The USEPA agreed with the strategies presented in the RFI Work Plan and requested that Norfolk Ship Repair develop and implement a work plan for a Facility Wide Baseline Evaluation and Release Assessment. Norfolk Ship Repair retained O'Brien & Gere to develop and implement the FWBE and Release Assessment.

1.1. Facility Wide Baseline Evaluation (FWBE)

The objective of the FWBE is to evaluate current conditions across the facility, and at its borders, with consideration of the location, history, and uses of the facility and the land it lies on. Due to the urban-industrial nature of the site, and its location on reclaimed land, baseline concentrations at BAE Norfolk Ship Repair are likely to be higher than background levels typically acknowledged by regulatory agencies, as well as those concentrations used as typical risk-based screening levels. These elevated environmental concentrations are likely reflective of urban/industrial use and reclaimed land rather than the operation of solid waste management units/areas of concern (SWMUs/AOCs). It is the intention of Norfolk Ship Repair to embody consideration for these anthropogenic influences within the strategy of the RCRA program and subsequent investigative, evaluation, and corrective measures efforts. It is the intent of the FWBE to assess the non-SWMU/AOC-related environmental conditions at the facility.

The extent of the FWBE was based on the type, nature, and locations of the SWMUs/AOCs at BAE Norfolk Ship Repair and the conditions at the facility's boundaries. This information will be used to assess soil and groundwater conditions not related to the operation of the SWMU/AOCs identified at the facility.

1.2. Release Assessment

A Release Assessment is conducted to confirm the presence or absence of a release from specific SWMUs/AOCs. A list of constituents of potential concern (COPC), if any, is developed for each SMWU/AOC based on historic operations and each SWMU/AOC is evaluated for evidence of a release. Information presented in the 1997 NCAPS report indicated that no releases were observed at a number of the listed SWMUs/AOCs. Norfolk Ship Repair has reviewed and documented the current conditions of each SWMU/AOC identified in the NCAPS Report to evaluate whether a release has occurred. The initial phase of a Release Assessment included a visual inspection of each of the SWMUs/AOCs for evidence of a potential release and, based on inspections and the likelihood of a release of COPCs, a release assessment investigation was conducted. Appendix A of the FWBE and Release Assessment Work Plan presented the results of the initial visual inspections of the SWMUs/AOCs. Table 1-1 presents a list of identified SWMUs/AOCs at the shipyard. Table 1-2 presents a summary of SWMUs/AOCs recommended for "No Further Action" (NFA) and the rationale for the recommendation. Table 1-3 presents a list of SWMUs/AOCs that were identified for Release Assessment sample collection and analysis.

The Release Assessment investigation comprised the collection and analysis of environmental samples from suspected release locations. Based on the results of the Release Assessment investigation, individual SWMUs/AOCs were identified as appropriate for no further action, interim measures, or additional investigation through an RFI.

1.3. Facility Location

Norfolk Ship Repair is located on the Elizabeth River in Norfolk, Virginia. The site location map is presented as Figure 1. The facility is approximately 110 acres and is bounded on the west and southwest by the Elizabeth River and to the north, east, and southeast by parking areas, City-owned scrap yards, and Interstate 264.

Surrounding Norfolk Ship Repair to the east are commercial, and industrial areas. Drinking water for the facility and area surrounding Norfolk Ship Repair is supplied by the City of Norfolk, which specifically prohibits by ordinance the use of groundwater. Consequently, there are no supply water wells within one mile of the Norfolk Ship Repair property boundary and no potable supply wells within five miles of the facility.

1.4. Facility History

Norfolk Ship Repair repairs military and commercial ships, and has been in operation since 1915. The Norfolk Ship Repair facility was built on native material and dredged and other fill material mostly at the north end of the facility.

The shipyard accommodates two dry docks and five piers. A variety of activities occur at the shipyard including ship repair, machine shops, offices, waste water treatment plant, oil recovery and treatment facility, grit blasting, painting, dry docks, metal works, hazardous material use and storage, scrap metal containers, fire protection services, and other shipyard related services.

1.5. Regional Land Conditions

The overall topography of the Norfolk area is generally flat with subtle hills.

1.5.1. Regional Geology

Norfolk Ship Repair is located in the Coastal Plain Physiographic Province of southeastern Virginia. Underlying the Coastal Plain are unconsolidated gravels, sands, silts, and clays, ranging in age from Cretaceous to Recent. Bedrock in the tidewater area of Norfolk area is approximately 2,400 ft below ground surface. Six formations have been documented in the vicinity of Norfolk Ship Repair:

- The Potomac Group - overlies Precambrian granitic and metamorphic "basement" rocks
- Transitional Beds - occurring at a depth of approximately 700 ft and is a 40-ft thick sequence of clay beds and sands
- The Mattaponi Formation - is of marine origin and is first encountered at a depth of approximately 500 ft and is 160 to 180 ft thick
- The Calvert Formation - first encountered at a depth of approximately 400 ft
- The Yorktown Formation - estimated to be at a depth of approximately 70 ft in the vicinity of the site.

The sediments overlying the Yorktown Formation are mostly fill materials, which range from 40 to 60 ft in thickness. Some of the basal sediments could be of Quaternary age and would belong to the Columbia Group. The Columbia Group is characterized by light-colored clay beds interspersed with oxidized fine- to medium-grained quartz sands and silt.

1.5.2. Regional Hydrogeology

The geologic formations underlying the Norfolk area are divided into four principal aquifers. From the land surface downward these units are the Quaternary Aquifer, the Yorktown Aquifer, the Eocene-Paleocene Aquifer, and the Cretaceous Aquifer (as designated by J.F. Harsh, 1980).

According to research at the Tidewater Regional office and Richmond office of the VDEQ, there are no supply water wells within 1 mile of the facility and no potable water supply wells within a 5-mile radius. According to Department of Utilities, VDEQ, and City of Norfolk representatives, the City of Norfolk municipal water supply system derives its water from surface water sources.

1.5.3. Surface Water

The nearest surface water is the southern branch of the Elizabeth River. The surface water flanks Norfolk Ship Repair facility to the north and west. Surface water is recharged from further upstream, the Dismal Swamp, precipitation, and groundwater.

This portion of the Elizabeth River, upstream of and including the area adjacent to Norfolk Ship Repair, has been widely impacted by anthropogenic constituents. The VDEQ has classified the Elizabeth River as an "impaired" waterway, and the Chesapeake Bay Program has characterized the Lower James River as an "Area of Emphasis".

1.5.4. Subsurface Conditions at Norfolk Ship Repair

The Norfolk Ship Repair facility was built on dredged material in the northern portions of the facility and natural river and marsh sediments.

Given the longevity of the shipyard's operations (90 years) and surrounding industrial nature, it is possible that the land surrounding and underneath the facility has experienced anthropogenic impacts and influences beyond the control of Norfolk Ship Repair, and independent of possible impacts from currently regulated SWMUs/AOCs. It is the intention of Norfolk Ship Repair to embody consideration for these anthropogenic influences within the strategy of the RCRA program and subsequent investigative, evaluation, and corrective measures efforts.

2. FWBE and Release Assessment Field Activities

To establish a baseline evaluation, and evaluate whether a release had occurred from a SWMU/AOC, soil borings were conducted across the site, in areas most likely unaffected by SWMUs/AOCs and also in those areas where a release would be likely if one was to occur. Fourteen (14) areas were chosen to establish baseline concentrations at Norfolk Ship Repair. Based on the results of the Release Assessment screening (described in the Work Plan [July 2007]), nine SWMUs/AOCs were identified as requiring additional investigation to confirm whether or not a release had occurred as the result of the operation of the unit. Sample areas are depicted on Figure 4.

Prior to use, equipment was calibrated according to the specifications issued by the manufacturer. Records detailing the calibration procedures, standards, dates, and personnel responsible for the calibration accompanied equipment calibrated by rental companies before receipt by O'Brien & Gere. Equipment requiring daily or weekly calibration was calibrated onsite if necessary, or at the discretion of the onsite geologist.

BAE Systems Norfolk Ship Repair was responsible for utility location, clearance and mark-out. O'Brien & Gere worked with BAE Systems to adhere to the sample areas selected by the USEPA; however, in some cases, sample areas may have been adjusted with consideration to utilities, safety issues, and/or shipyard activities.

An O'Brien & Gere geologist was onsite during sample collection procedures. The onsite geologist collected samples for laboratory analysis, inspected and classified soil, prepared appropriate field sheets and/or logs, and documented sample site and sample conditions. Bore logs maintained by the on-site geologist are presented in Appendix A.

The 23 sample areas were sampled in accordance with methods outlined in the SAP (Appendix C of the RFI Plan). Sampling was conducted as near to the center of the area as possible, taking into account site safety, utilities, both underground and above ground, and shipyard activities. Norfolk Ship Repair is a highly industrialized facility; as a result, activities at the shipyard at times necessitated moving sample areas. Sample areas were adjusted at the discretion of the onsite field task leader.

Soil cuttings, fluids, and other wastes generated by sampling activities were containerized and left on-site for management by Norfolk Ship Repair.

2.1. Soil Sample Collection

Soil sample collection from the 23 sample areas was achieved using hollow stem auger from August 20, 2007 through August 24, 2007. Surface soil (0-6 inches) and near surface soil (6-12 inches) samples were collected using decontaminated stainless steel split spoon soil sampler, stainless steel spoons, and stainless steel bowls. Soil samples were obtained in accordance with the procedures outlined in the SAP (Appendix C of the RFI Plan). Soil sampling was conducted until the water table was encountered.

Deeper soil samples were collected at 5-ft intervals during drilling. Samples were collected ahead of the drill bit to prevent disruption of the soil column and/or smearing of the sample before collection.

Each sample was uniquely labeled using standards given in the SAP (Appendix C of the RFI Plan), and the soil boring location was marked on the appropriate site map and described in the onsite geologist's field logbook. Boring logs were developed by the on site geologist at the completion of field activities. Descriptions of soil sample texture, composition, color, consistency, moisture content, and recovery were recorded.

One soil sample from each of the 23 sample areas was collected from between 5-ft below grade and the water table for laboratory analysis. Soil sample selection was based on field screening using a photoionization detector and/or visual observations.

Soil samples were shipped to Life Science Laboratories for analysis of total RCRA metals, pH, moisture, Target Compound List (TCL) Volatile Organic Compounds (VOCs) by USEPA Method 8260, and TCL Semi-Volatile Organic Compounds (SVOCS) by USEPA Method 8270. Soil samples for Total Organic Carbon (TOC) analysis were shipped to Severn Trent Laboratories in South Burlington, Vermont.

2.2. Groundwater Sample Collection

After soil sampling was completed, thirteen (13) locations were converted into monitoring wells. Six of the monitoring wells were constructed as site perimeter monitoring wells (SWMW-101, SWMW-103, SWMW-104, SWMW-108, RA-112, RA-113). Monitoring well installation and development was completed in accordance with the Work Plan. Groundwater samples were collected from 15 monitoring wells (13 new wells and two existing wells) from August 28, 2007 through August 29, 2004.

Monitoring wells were sampled in accordance with the technologies outlined in the SAP.

Samples were transferred directly from the sampling equipment into the container that has been specifically prepared for the preservation and storage of compatible parameters. Specific information regarding sample bottle and preservation requirements are provided in the QAPP (Appendix D of the RFI Plan).

Groundwater samples were collected utilizing a peristaltic pump and dedicated tubing. Upon collection, samples were labeled according to procedures outlined in the SAP (Appendix C of the RFI Plan) and placed in an ice filled cooler called for by the analysis. Samples were shipped to Life Science Laboratories for analysis of dissolved RCRA metals, pH, TCL SVOCs (by USEPA Method 8270), and TCL VOCs (by USEPA Method 8260).

2.3. FWBE and Release Assessment Analytical Results

Laboratory analytical reports are presented in Appendix C. QA/QC results were acceptable.

2.3.1 Soil Analytical Results

Collected soil samples were analyzed by USEPA Method 8260 for VOCs, USEPA Method 8270 for SVOCs, and RCRA Target Analyte List (TAL) Metals, for both total and dissolved. The analytical results for groundwater samples collected were compared to the USEPA Region III Soil Risk Based Concentration (RBC) standards for both residential and industrial soils.

2.3.1.1 Volatile Organic Compounds in Soil

VOCs were not detected in soil samples above USEPA Region III RBCs for either residential or industrial soils.

2.3.1.2 Semivolatile Organic Compounds in Soil

Four SVOCs were detected above USEPA Region III RBCs for industrial soils, as follows:

Parameter	USEPA RBC for Industrial Soils
Benzo(a)anthracene	3920 ppb
Benzo[a]pyrene	392 ppb
Benzo(b)fluoranthene	3920 ppb
Dibenz(a,h)anthracene	392 ppb

ppb = parts per billion (ug/kg)

The following locations exhibited SVOCs above USEPA Region III RBCs for industrial soils:

Location	Depth Collected*	Parameter	Concentration
SWMU 105	3 to 5 ft bg	benzo(a)pyrene	540 ppb
RA-111	4 to 6 ft bg	benzo(a)anthracene	7100 ppb
RA-111	4 to 6 ft bg	benzo(a)pyrene	4500 ppb
RA-111	4 to 6 ft bg	benzo(b)fluoranthene	8200 ppb
RA-111	4 to 6 ft bg	dibenz(a,h)anthracene	690 ppb
RA-114	3 to 6 ft bg	benzo(a)pyrene	460 ppb

*ft bg - feet below ground surface
ppb = parts per billion (ug/kg)

2.3.1.3 Metals in Soil

Analysis for RCRA TAL metals in soil samples did not indicate levels of TAL metals above USEPA Region III RBCs for either residential or industrial scenarios.

2.3.2 Groundwater Analytical Results

Groundwater samples were analyzed by USEPA Method 8260 for VOCs, USEPA Method 8270 for SVOCs, and RCRA TAL Metals, both total and dissolved. Analytical results for groundwater samples

were compared to federal Maximum Contaminant Levels (MCLs) for drinking water. If no MCL is listed for a specific constituent, the result was compared to the USEPA Region III Residential RBCs for drinking water.

2.3.2.1 Volatile Organic Compounds in Groundwater

Four VOCs were detected above USEPA Region III RBCs for residential drinking water, however, three of those constituents were below federal MCLs, as follows:

Location	Parameter	Concentration	Federal MCL	USEPA Region III RBC
SWMU-102	Benzene	1.03 ppb	5 ppb	0.34 ppb
SWMU-102	Trichloroethene	0.36 ppb	5 ppb	0.026 ppb
RA-112	Tetrachloroethene	0.39 ppb	5 ppb	0.10 ppb
E-MW-15	1,4-Dichlorobenzene	0.54 ppb	none listed	0.28 ppb

ppb = parts per billion (ug/l)

While parameter values were compared to federal MCLs and USEPA Region III RBCs for drinking water, this scenario is unrealistic and ultra conservative, as there are no drinking water wells within a 5-mile radius and groundwater relieves to nearby surface water.

2.3.2.2 Semivolatile Organic Compounds in Groundwater

One location, SWMW-102, demonstrated one SVOC above the federal MCL, and three SVOCs above USEPA Region III RBCs for drinking water, as follows:

Parameter	Federal MCL	USEPA Region III RBC	Concentration SWMU-102
benzo(a)anthracene	none listed	0.03 ppb	2.0 ppb
benzo(a)pyrene	0.2 ppb	0.003 ppb	1.3 ppb
benzo(b)fluoranthene	none listed	0.30 ppb	2.1 ppb
benzo(k)fluoranthene	none listed	0.30 ppb	0.79 ppb

ppb = parts per billion (ug/l)

While parameter values were compared to federal MCLs and USEPA Region III RBCs for drinking water, this scenario is unrealistic and ultra conservative, as there are no drinking water wells within a 5-mile radius and groundwater relieves to nearby surface water.

2.3.2.3 Metals in Groundwater

Analysis for total and dissolved metals in groundwater did not indicate levels of metals, total or dissolved, above federal MCLs and/or USEPA Region III Residential RBCs for drinking water.

2.4 Groundwater Monitoring

On two separate occasions groundwater monitoring was conducted across the site. Depth to groundwater was measured, and in addition, each location was gauged for the presence of non-aqueous phase liquids (NAPL). NAPL was detected in three locations. The three locations are monitoring wells that were previously existing at the facility prior to the commencement of the RCRA Corrective Action program, and were installed to address a release under the VDEQ Storage

Tank program. This occurrence of NAPL is part of an ongoing investigation under the direction of the VDEQ and therefore will not be addressed as part of the RCRA Corrective Action Program.

A groundwater contour map (Figure 5) was developed for the groundwater elevation measured for the December 26, 2007 event. As depicted in Figure 5, groundwater in the southern half of the site appears to flow westerly towards the Elizabeth River. However, groundwater in the center of the facility and in the northern portion of the facility flows north to northeasterly (inland). This flow regime, while somewhat atypical for sites proximal to surface water, has been documented historically in localized areas of the site.

The hydraulic gradient is estimated to be approximately 0.004 ft/ft. Groundwater flow velocity is estimated to range between 0.0013 ft/day to 12.8 ft/day.

2.5 Conclusions and Summary of FWBE and Release Assessment

Soil and groundwater were evaluated across the site through the installation of 14 soil borings and 13 monitoring well installations. Soil and groundwater were analyzed for VOCs, SVOCs, and metals. The following conclusions are presented based on the sample and analysis of soil and groundwater across the facility during the FWBE and Release Assessment activities:

1. Groundwater appears to be flowing westerly towards the adjoining surface water in the southern portion of the site, and north to northeasterly (inland) in the central and northern portions of the site.

2. VOCs were not detected in the soil above USEPA Region III RBCs for residential or industrial soils and therefore do not appear to be constituents of concern in soil.

3. SVOCs were detected in the soil at three locations, SWMW-105, RA-111, and RA-114 in excess of USEPA Region III RBCs for industrial soil. Further investigation at these areas should be conducted to evaluate whether these detections were localized or if there is a significant occurrence.

4. Metals were not detected in the soil above USEPA Region III RBCs for residential or industrial soils across the site and therefore do not appear to be constituents of concern in soil.

5. VOCs were not detected in the groundwater, above MCLs with one exception: 1,4-Dichlorobenzene was detected E-MW-15. This location is being addessed under a State remediation program, and therefore will not be addressed under the RCRA Corective Action program.

6. One location (SWMW-102) exhibited one SVOC, benzo[a]pyrene, in the groundwater above the federal MCL and three SVOCs above USEPA Region III RBCs for drinking water.

7. No metals, either total or dissolved, were detected in the groundwater above federal MCLs or USEPA Region III RBCs for drinking water, and therefore, metals do not appear to be constituents of concern in groundwater.

8. Based on comparison to MCLs, migration of impacted groundwater at the site appears to be under control.

Based on the analtyical results of the FWBE and Release Assessment investigation, the USEPA requested additional investigation efforts. Three locations, SWMW-102, RA-111, and RA-114 were identifed as requiring additional groundwater sampling, to be analyzed for polyaromatic hydrocarbons (PAHs) by USEPA Method 8270 (Selected Ion Monitorin [SIM]). Three locations, SWMW-105, RA-111, and RA-114 were identified as requiring additional soil sampling to delineate the horizontal extent of impact. The sampling efforts and results of these addenda activities are described in the sections that follow.

3. FWBE and Release Assessment Addendum Sampling

Based on the analytical results of the FWBE and Release Assessment, and discussions with the USEPA on May 29, 2008, additional investigation efforts were conducted at the site. Three locations, SWMW-102, RA-111, and RA-114 were identifed as requiring additional groundwater sampling. Three locations, SWMW-105, RA-111, and RA-114 were identified as requiring additional soil sampling to delineate the horizontal extent of impact.

3.1 Addendum Groundwater Sampling

One groundwater sample was collected from three monitoring wells: SWMW-102, RA-111, and RA-114. Groundwater samples were collected using a stainless steel bailer or dedicated disposable bailer and in accordance with the Sampling and Analysis Plan (SAP) presented as Appendix C of the *RCRA Facility Investigation (RFI) Work Plan* developed by O'Brien & Gere in December 2005. Groundwater samples were collected on July 22, 2008 and submitted for laboratory analysis of PAHs by USEPA Method 8270 Selected Ion Monitoring (SIM).

3.2 Addendum Soil Sampling

Three locations were identified as requiring additional soil sampling to delineate the horizontal extent of impact: SWMW-105, RA-111, and RA-114. The vertical extent of impact was demonstrated by the absence of SVOCs in the groundwater at these locations. Soil borings were conducted within 5-ft of the existing monitoring well. At SWMW-105, two soil borings were conducted in the approximate down gradient direction of the previously installed monitoring well. At location RA-114, one soil boring was conducted in the approximate downgradient direction of the previously installed monitoring well. At location RA-111, four soil borings were conducted. During the installation of the first and second soil boring, visual evidence of impact was identified. Two additional soil borings were conducted in the approximate downgradient to evaluate the horizontal extent.

One soil sample from each soil boring was collected for laboratory analysis. The soil samples from the vicinity of SWMW-105 were collected from 3-ft to 5-ft below grade. The soil samples from the vicinity of RA-111 and RA-114 were collected from 4-ft to 6-ft below grade. Soil samples were collected using geoprobe sampling techniques and in accordance with the SAP presented as Appendix C of the *RCRA Facility Investigation (RFI) Work Plan* developed by O'Brien & Gere in December 2005. Soil samples were collected on July 22, 2008 and submitted for laboratory analysis of PAHs by USEPA Method 8270 SIM.

3.3 Addendum Sampling Results

3.3.1 Addendum Groundwater Sampling Results

One location, SWMU-102, demonstrated seven constituents above comparision criteria. With the exception of Indeno[1,2,3-cd]Pyrene detected in RA-114, constituents detected in RA-111 and RA-114 were below comparison criteria.

Parameter	Federal MCL	USEPA Region III RBC	RA-111	RA-114	SWMU-102
benzo(a)anthracene	none listed	0.03 ppb*	0.02 ppb	0.02 ppb	1.48 ppb
benzo(a)pyrene	0.2 ppb	0.003 ppb	ND	ND	1.16 ppb
benzo(b)fluoranthene	none listed	0.30 ppb	ND	0.05 ppb	2.08 ppb
benzo(k)fluoranthene	none listed	0.30 ppb	ND	0.02 ppb	0.81 ppb
Dibenzo[a,h]anthracene	none listed	0.003 ppb	ND	ND	0.15 ppb
Indeno[1,2,3-cd]Pyrene	none listed	0.03 ppb	ND	0.04 ppb	0.45 ppb
Naphthalene	none listed	0.14 ppb	ND	0.01 ppb	3.11 ppb

*ppb - parts per billion
ND - Non Detect

Indeno[1,2,3-cd]Pyrene was detected at RA-114 only slightly above the USEPA Region III RBC for drinking water, which is an unrealistic and ultra conservative scenario, as groundwater is not used for drinking water at this facility, or within a minimum of 5-miles of the facility. In addition, this consitutent was not detected during previous sampling events. Another sample from this location would be required to assess the validity and significance of this datum.

Based on the groundwater contours presented on Figure 5, SWMW-102 is situated upgradient to sample locations SWMW-101 and SWMW-103. None of the detected constituents were demonstrated at SWMW-101 and/or SWMW-103 above laboratory detection limits. The absence of the detected constituents at downgradient locations suggests that natural processes of dispersion, dilution, and degradation are ongoing, and that impacted groundwater is not migrating off site or beyond these downgradient locations.

3.3.2 Addendum Soil Sampling Results

Analytical results of soils were compared to USEPA Region III RBCs for residential and industrial soils. Since the facility has a history of industrial activies, and the future use of the facility will continue to be for industrial activies, comparison to residential RBCs is considered an unrealistic and ultra conservative scenario. Of the three locations selected for additional investigative sampling (RA-111, RA-114, and SWMU-105), soil samples collected from the vicinity of only one location, RA-111 SB-01, demonstrated a single constituent (benzo(a)pyrene) concentration above USEPA Region III RBCs for industrial soils.

Parameter	RBC for Industrial Soils	RBC for Residential Soils	RA-111				RA-114	SWMU-105	
			SB01	SB02	SB03	SB04	SB01	SB01	SB02
benzo(a)anthracene	2,100	150 ppb	230	120	33	50	2.4	ND	20
benzo(a)pyrene	210 ppb	15 ppb	240	120	30	43	4.3	ND	20

SB = Soil Boring
ppb = parts per billion (ug/kg)

The analtyical results of the soil borings demonstrate that detected concentrations are limited to a localized area around the previously installed monitoring well. The detection of a single constituent, (benzo(a)pyrene, above the USEPA RBC for industrial soil at RA-111 was demonstrated at the soil boring conducted closest to RA-111(SB01). The concentrations of this constituent decrease with distance from RA-111, in the downgradient direction, to below USEPA RBCs for industrial soils within approximately 25-feet. As such, it appears that this impact is localized.

4. Conclusions

Based on the results of the FWBE and Release Assessment investigation conducted at the Norfolk Ship Repair facility, the USEPA requested additional sampling to be conducted in four areas, as follows:

- Groundwater sampling at SWMW-102, RA-111, and RA-114.
- Soil sampling at SWMW-105, RA-111, and RA-114.

Based on the results of the initial FWBE and Release Assessment investigation, and the results of the additional sampling requested by the USEPA, the following conclusions are presented:

1. Groundwater appears to be flowing westerly towards the adjoining surface water in the southern portion of the site, and north to northeasterly (inland) in the central and northern portions of the site.

2. VOCs were not detected in the soil above USEPA Region III RBCs for residential or industrial soils and therefore do not appear to be constituents of concern in soil.

3. SVOCs were detected in the soil at three locations, SWMW-105, RA-111, and RA-114 in excess of USEPA Region III RBCs for industrial soil. Further investigation at these areas demonstrated that these detections were of localized horizontal and vertical extent.

4. Metals were not detected in the soil above USEPA Region III RBCs for residential or industrial soils across the site and therefore do not appear to be constituents of concern in soil.

5. VOCs were not detected in the groundwater, above MCLs with one exception: 1,4-Dichlorobenzene was detected E-MW-15. This location is being addessed under a State remediation program, and therefore will not be addressed under the RCRA Corective Action program.

6. One location (SWMW-102) exhibited one SVOC, benzo[a]pyrene, in the groundwater above the federal MCL and three SVOCs above USEPA Region III RBCs for drinking water. Further investigation of these parameters demonstrated that while SVOCs are present at SWMW-102, the extent is limited. The absence of the detected constituents at downgradient locations suggests that natural processes of dispersion, dilution, and degradation are ongoing, and that impacted groundwater is not migrating off site or beyond these downgradient locations.

7. During the additional sampling at SWMW-102 requested by the USEPA, one SVOC, indeno[1,2,3-cd]Pyrene, was detected only slightly above the USEPA Region III RBC for drinking water. Drinking water RBCs are an unrealistic and ultra conservative scenario, as groundwater is not used for drinking water at this facility, or within a minimum of 5-miles of the facility. This consitutent was not detected during the initial FWBE and Release Assessment sampling event. Another sample from this location would be required to assess the validity and significance of this datum.

8. No metals, either total or dissolved, were detected in the groundwater above federal MCLs or USEPA Region III RBCs for drinking water, and therefore, metals do not appear to be constituents of concern in groundwater.

9. Based on comparison to MCLs, migration of impacted groundwater at the site appears to be under control.

10. Based on the completion of the FWBE and Release Assessment investigation, and addendum activities, the following SWMU/AOCs are recommended for "no further action":

SWMU/ AOC #	SWMU/AOC Name	Rationale for "No Further Action"
1	Closed hazardous waste container storage area	Area achieved "clean closure" as approved by VDEQ on February 20, 1997
2	Hazardous waste accumulation area	Soil and groundwater (RA-112) sampling results from FWBE and Release Assessment indicate no constituents of concern.
3A	Chrome plating hazardous waste satellite accumulation site (SAS)	Located inside Bldg. 101 on bermed concrete floor slab; no cracks in floor; no evidence of release
3B	Former scrap yard hazardous waste SAS	Soil and groundwater (RA-109) sampling results from FWBE and Release Assessment indicate no constituents of concern.
3C	Machine Shop Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3D	Tool Room Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3E	Crane Maintenance parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3F	Rigger Room Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3G	Former Machine Shop Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3H	St. Helena Annex Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
4	Compressor Room USTs	Being addressed under VDEQ Storage Tank Program (PC 98-2215) and participating in State Tank Reimbursement Fund
5	Compressor Room Oil/Water Separator	Area to be addressed under State VDEQ program
6	Waste Oil Slop Tanks	ASTs in good condition; Secondary containment; no cracks in containment; no evidence of release
7	WWTS and Sludge dumpster	WWTS regulated under Clean Water Act; Engineering controls on dumpster; no evidence of release
8	VPDES outfalls	Regulated under Clean Water Act; RCRA exclusion 40CFR261.4(a)2
9	Former Concrete Tanks	Was previously addressed under VDEQ Storage Tank Program (PC 98-2296) and achieved closure in 2007 by VDEQ.
10	Scrap Yard	No evidence of release; RCRA exclusion 40CFR261.4(a)13
11	Scrap Yard Spent Blast Grit Hut	Soil sampling results from FWBE and Release Assessment indicates no constituents of concern.
12A	Chrome Plating Scrubber Air stack	No evidence of release; regulated under Title V of Clean Air Act, no violations.
12B	Former Steam Boiler	Previously addressed under VDEQ Storage Tank Program and achieved closure in 2008 by VDEQ.
12C	Two Steam Boilers	No waste; Regulated under VDEQ Storage Tank Program and Title V of Clean Air Act; no violations; no evidence of a release
12D	Compressor Boiler Room	No waste; Regulated under VDEQ Storage Tank Program and Title V of Clean Air Act; no violations; no evidence of a release
13	Water Front Area - Piers and drydocks	No evidence of a release; engineering controls in place to prevent releases; no waste managed

14	Blasting and painting enclosures/pads	Soil sampling results from FWBE and Release Assessment indicates no constituents of concern.
15	Old spent blast storage area	No evidence of a release; BAE no longer active at site; Current owner responsible for condition
16	Old scrap yard	No hazardous waste or materials managed; no evidence of release; RCRA exclusion 40CFR261.4(a)13;current owner occupied for 20 yrs.
17	Former asbestos containment rolloff	Engineering controls in place prevented release; area inspected by State Certified Inspector and found no evidence of release; removed 1997/98
18	Former silver recovery unit.	Closed loop system; inside building; no incident of releases; removed in 1997/98; RCRA exclusion 40CFR264.4(a)8(i)
19A	Carpentry shop	Non-hazardous operations; no hazardous or RCRA constituents used, stored, treated, or released; no opacity violations
19C	Paint Booth	Soil sampling and groundwater (RA-106) from FWBE and Release Assessment indicate no constituents of concern.
19D	Wheelabrator	Soil sampling and groundwater (RA-106) from FWBE and Release Assessment indicate no constituents of concern.
20	Former outdoor small parts blasting/painting area	Soil sampling and groundwater (RA-111 and RA-114) from FWBE and Release Assessment indicates no constituents of concern.
21	Trash dumpsters and port-a-potties	Only municipal waste managed; no hazardous waste or constituents used, stored, treated, or released

Table 1-1. List of SWMUs/AOCs

SWMU/ AOC No.	Location	SWMU / AOC Name	Status
1	Paint Waste Bldg.	Closed Haz Waste Container Storage Area	Closed
2	Bldg. 622	Haz Waste Accumulation Area	Closed
3 A	Bldg. 101	Chrome Plating Haz Waste SAS	Active
3 B	Navy Parking Lot	Former Scrap Yard Haz Waste SAS	Closed
3 C	Bldg. 101	Machine Shop Parts Washer	Active
3 D	Bldg. 205	Tool Room Parts Washer	Active
3 E	Bldg. 528	Crane Maintenance Parts Washer	Closed
3 F	Bldg. 513	Rigger Room Parts Washer	Closed
3 G	Bldg. 616	Former Machine Shop Parts Washer	Closed
3 H	Former Bldg. 621	StHA Former Flush Shop Parts Washer	Closed
4	Bldg. 513	Compressor Room USTs	Closed
5	Bldg. 513	Compressor Room O/W Separator	Active
6	Bldg. 527	AST Farm	Active
7	Bldg. 513	WW Treatment System & Sludge Dumpster	Active
8		VPDES Outfalls	
9	Bldg. 616	Former Concrete Tanks	Closed
10	Navy Parking Lot	Former Scrap Yard	Closed
11	Navy Parking Lot	Scrap Yard Spent Blast Grit Hut	Closed
12 A	Bldg. 101	Chrome Plating Scrubber Air Stack	Active
12 B	Pier No. 1	Former Steam Boiler	Closed
12 C	Bldg. 301	Two Steam Boilers	Active
12 D	Bldg. 513	Compressor Room Two Steam Boilers	Active
13	Water Front	Piers and Drydocks	Active
14	Bldg. 550	Blasting and Painting Enclosures/Pads	Active
15	Near Former Bldg. 622	StHA Former Spent Blast Storage Area	Closed
16	Near Former Bldg. 621	StHA Former Scrap Yard	Closed
17	Bldg. 625	Former Asbestos Containment Rolloff	Closed
18	Bldg. 424	Former Silver Recovery Unit	Closed
19 A	Bldg. 513	Carpentry Shop	Active
19 B	Bldg. 202	Blacksmith Shop	Active
19 C	Bldg. 514	Paint Booth	Inactive
19 D	Bldg. 514	Wheelabrator	Closed
20	Blocking Equipmt Storage Area	Former Outdoor Small Parts Blasting/Painting Area	Closed
21	Yard Wide	Trash Dumpsters and Portapotties	Active

Notes:
1. **Haz** - Hazardous
2. **SAS** - Satelite Accumulation Site
3. **StHA** - St. Helena Annex
4. **USTs** - Underground Storage Tanks
5. **ASTs** - Aboveground Storage Tanks
6. **WW** - Wastewater
7. **Bldg.** - Building
8. **SWMU** - Solid Waste Management Unit
9. **AOC** - Area of Concern

Table 1-2. List of SWMUs/AOCs Selected for No Further Action (NFA)

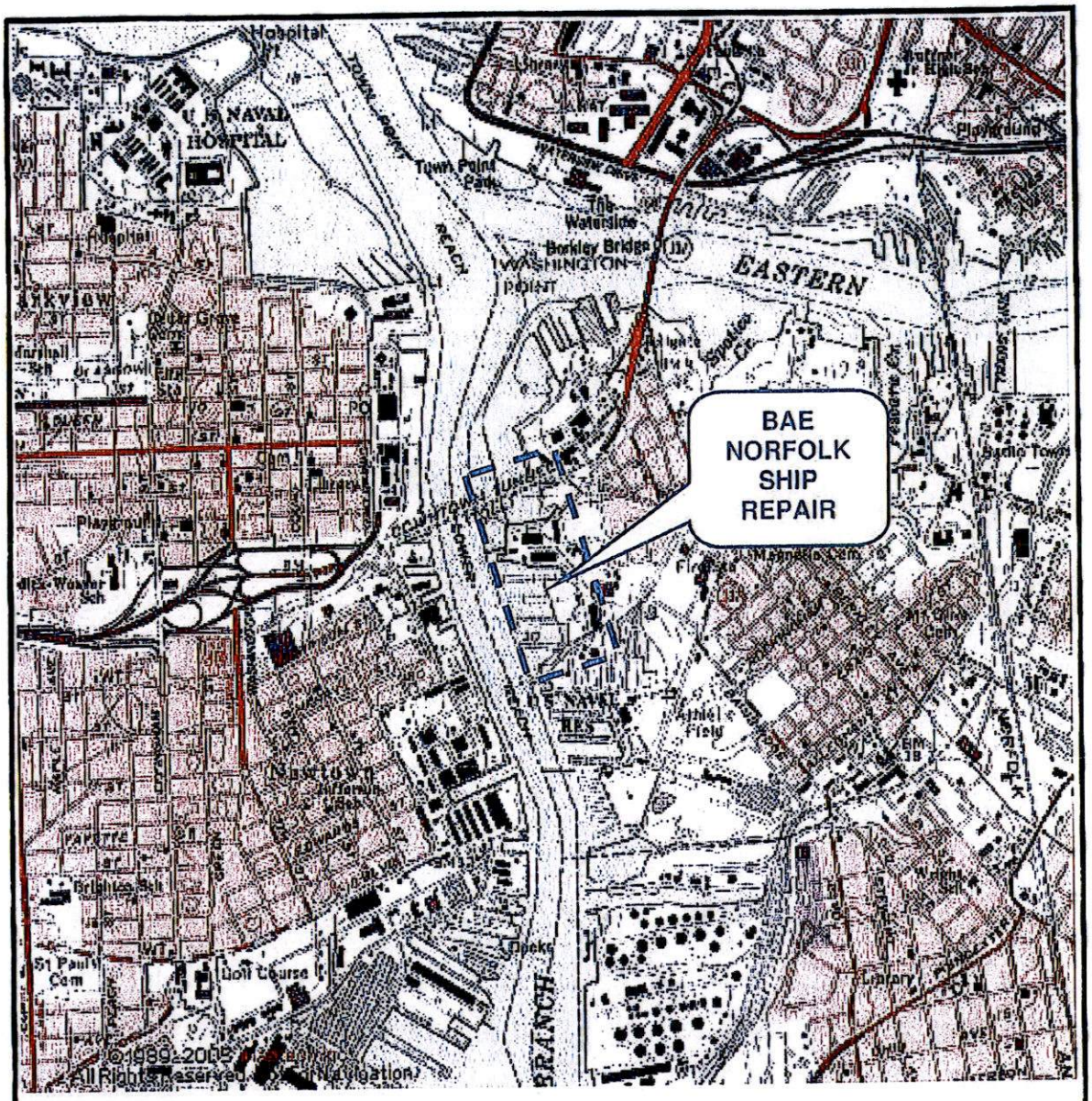
SWMU/ AOC No.	SWMU / AOC Name	Rationale for No Further Action (NFA)
1	Closed Haz Waste Container Storage Area	Area achieved "clean closure" as approved by VDEQ on February 20, 1997
3A	Chrome Plating Haz Waste SAS	Located inside Bldg. 101 on bermed concrete floor slab; no cracks in floor; no evidence of release
3 C	Machine Shop Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3 D	Tool Room Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3 E	Crane Maintenance Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3 F	Rigger Room Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3 G	Former Machine Shop Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
3 H	StHA Former Flush Shop Parts Washer	Parts washer is closed loop; only non-haz aqueous-based;no releases; RCRA exclusion 40CFR264.4(a)8(i)
4	Compressor Room USTs	Being addressed under VDEQ Storage Tank Program (PC 98-2215) and participating in State Tank Reimbursement Fund
6	Waste Oil Slop Tanks	ASTs in good condition; Secondary containment; no cracks in containment; no evidence of release
7	WWTS and Sludge dumpster	WWTS regulated under Clean Water Act; Engineering controls on dumpster; no evidence of release
8	VPDES outfalls	Regulated under Clean Water Act; RCRA exclusion 40CFR261.4(a)2
9	Former Concrete Tanks	Being addressed under VDEQ Storage Tank Program (PC 98-2296) and participating in State Petroleum Tank Reimbursement Fund
10	Scrap Yard	No evidence of release; RCRA exclusion 40CFR261.4(a)13
12 A	Chrome Plating Scrubber Air Stack	No evidence of release; regulated under Title V of Clean Air Act, no violations
12 B	Former Steam Boiler	Addressed under VDEQ Storage Tank Program and participating in State Tank Reimbursement Fund
12C	Two Steam Boilers	No waste; Regulated under VDEQ Storage Tank Program and Title V of Clean Air Act; no violations; no evidence of a release
12D	Compressor Boiler Room	No waste; Regulated under VDEQ Storage Tank Program and Title V of Clean Air Act; no violations; no evidence of a release
13	Water Front Area - Piers and drydocks	No evidence of a release; engineering controls in place to prevent releases; no waste managed
15	Old Spent Blast Storage Area	No evidence of a release; BAE no longer active at site; Current owner responsible for condition
16	Old Scrap Yard	No hazardous waste or materials managed; no evidence of release; RCRA exclusion 40CFR261.4(a)13;current owner occupied for 20 yrs.
17	Former Asbestos Containment Rolloff	Engineering controls in place prevented release; area inspected by State Certified Inspector and found no evidence of release; removed 1997/98
18	Former Silver Recovery Unit	Closed loop system; inside building; no incident of releases; removed in 1997/98; RCRA exclusion 40CFR264.4(a)8(i)
19 A	Carpentry Shop	Non-hazardous operations; no hazardous or RCRA constituents used, stored, treated, or released; no opacity violations
21	Trash Dumpsters and Portapotties	Only municipal waste managed; no hazardous waste or constituents used, stored, treated, or released

Notes:
1. **Haz** - Hazardous
2. **SAS** - Satelitte Accumulation Site
3. **StHA** - St. Helena Annex
4. **USTs** - Underground Storage Tanks
5. **ASTs** - Above Ground Storage Tanks
6. **WW** - Wastewater
7. **Bldg.** - Building
8. **SWMU** - Solid Waste Management Unit
9. **AOC** - Area of Concern

Table 1-3. SWMUs/AOCs Selected for Further Sampling, Sampling Media, and COPCs

SWMU/ AOC No.	SWMU / AOC Name	Proposed Sample Type(s)	Waste Managed	COPCs (Analytical Methods)
2	Haz Waste Accumulation Area	8 soil (four from 0 - 6 inches; four from just above water table); 1 groundwater	Oils (petroleum hydrocarbons); paints	total and dissolved TAL metals; VOCs; SVOCs
3 B	Former Scrap Yard Haz Waste SAS	4 soil (two from 0-6 inches; two from just above water table); 1 groundwater	Oils (petroleum hydrocarbons); paints; metal	total and dissolved TAL metals; VOCs; SVOCs
5	Compressor Room O/W Separator	1 groundwater (use existing well)	Oils (petroleum hydrocarbons)	VOCs; SVOCs; TAL metals
11	Scrap Yard Spent Blast Grit Hut	1 soil (two from 0-6 inches bg)	spent blast grit (metals, paint chips)	Total and TCLP TAL metals; SVOCs
14	Blasting and Painting Enclosures/Pads	2 soil (from 0-6 inches bg)	spent blast grit (metals, paint chips)	Total and TCLP TAL metals; VOCs; SVOCs
19 B*	Blacksmith Shop	2 soil (from 0-6 inches bg)*	petroleum hydrocarbons	VOCs; SVOCs*
19 C	Paint Booth	1 soil (from 0-6 inches bg)	spent blast grit (metals); paint	Total and TCLP TAL metals; VOCs
19 D	Wheelabrator	1 soil (from 0-6 inches bg)	spent blast grit (metals, paint)	Total and TCLP TAL metals; VOCs
20	Former Outdoor Small Parts Blasting/Painting Area	2 soil (from 0-6 inches bg); 1 groundwater	spent blast grit (metals); paint	Total and TCLP TAL metals; VOCs

Notes:
Haz = Hazardous
SAS = Satelite Accumulation Site
SWMU = Solid Waste Management Unit
AOC = Area of Concern
0-6 inches below surficial gravel, where present
SVOCs = Semi-Volatile Organic Compounds by USEPA Method 8270
VOCs - Volatile Organic Compounds by USEPA Method 8260
TAL - Target Analyte List
TCLP = Toxic Characteristic Leaching Proceedure
COPC = Constituents of Potential Concern
Samples collected from deeper than 6 inches bg will be based on field screening
* - Assessment in this area has been postponed until further notice, per USEPA April 2007 site visit



ADAPTED FROM: NORFOLK SOUTH QUADRANGLE, VA USGS 7.5 MIN. 1994

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

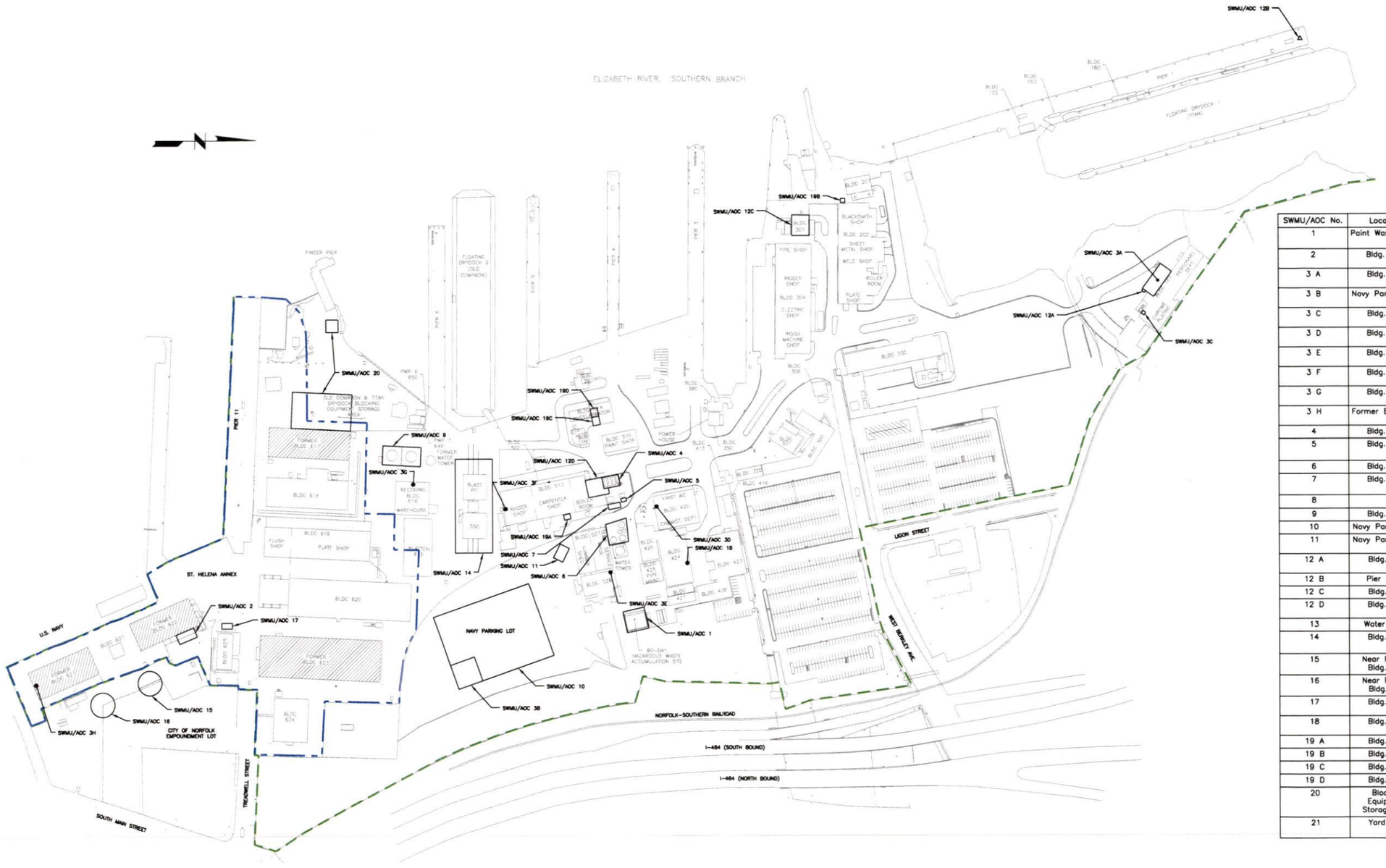
1 5 0 1 KILOMETER

SCALE: 1:24,000

O'BRIEN & GERE

SITE LOCATION
FACILITY WIDE BASELINE EVALUATION
BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILITY LEAD PROGRAM
EPA ID No. VA0143837896
NORFOLK, VIRGINIA 23523

FILE NO.	38119
DATE	07/05/2006
DWG NO.	1



SWMU/AOC No.	Location	SWMU / AOC Name	Status
1	Paint Waste Bldg.	Closed Haz Waste Container Storage Area	Closed
2	Bldg. 622	Haz Waste Accumulation Area	Closed
3 A	Bldg. 101	Chrome Plating Haz Waste SAS	Active
3 B	Navy Parking Lot	Former Scrap Yard Haz Waste SAS	Closed
3 C	Bldg. 101	Machine Shop Parts Washer	Active
3 D	Bldg. 429	Tool Room Parts Washer	Active
3 E	Bldg. 528	Crane Maintenance Parts Washer	Closed
3 F	Bldg. 513	Rigger Room Parts Washer	Closed
3 G	Bldg. 616	Former Machine Shop Parts Washer	Closed
3 H	Former Bldg. 621	SHA Former Flush Shop Parts Washer	Closed
4	Bldg. 513	Compressor Room USTs	Closed
5	Bldg. 513	Compressor Room O/W Separator	Active
6	Bldg. 527	AST Farm	Active
7	Bldg. 513	WW Treatment System & Sludge Dumpster	Active
8		VPDES Outfalls (Void)	
9	Bldg. 616	Former Concrete Tanks	Closed
10	Navy Parking Lot	Former Scrap Yard	Closed
11	Navy Parking Lot	Scrap Yard Spent Blast Grit Hut	Closed
12 A	Bldg. 101	Chrome Plating Scrubber Air Stack	Active
12 B	Pier No. 1	Former Steam Boiler	Closed
12 C	Bldg. 301	Two Steam Boilers	Active
12 D	Bldg. 513	Compressor Room two Steam Boilers	Active
13	Water Front	Piers and Drydocks	Active
14	Bldg. 550	Blasting and Painting Enclosures/Pads	Active
15	Near Former Bldg. 622	SHA Former Spent Blast Storage Area	Closed
16	Near Former Bldg. 621	SHA Former Scrap Yard	Closed
17	Bldg. 625	Former Asbestos Containment Rolloff	Closed
18	Bldg. 424	Former Silver Recovery Unit	Closed
19 A	Bldg. 513	Carpentry Shop	Active
19 B	Bldg. 202	Blacksmith Shop	Active
19 C	Bldg. 514	Paint Booth	Inactive
19 D	Bldg. 514	Wheelabrator	Closed
20	Blocking Equipment Storage Area	Former Outdoor Small Parts Blasting/Painting Area	Closed
21	Yard Wide	Trash Dumpsters and Portapotties	Active

LEGEND:

SITE BOUNDARY

ST. HELENA ANNEX BOUNDARY

IN CHARGE OF _____

DESIGNED BY _____ CHECKED BY _____

DRAWN BY _____

1"=150' 150 0 150 300

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS INC.

BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILTY LEAD PROGRAM
EPA ID NO. VAD003175072
NORFOLK, VIRGINIA 23523

GENERAL
SWMU/AOC LOCATIONS
SITE MAP

FILE NO. 12674.38119-002

DATE DEC. 2005

2

Dec 16, 2005 - 2:23pm

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Jun 13, 2007 - 3:19pm

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SWMU/AOC No.	Location	SWMU/AOC Name	Status
1	Paint Waste Bldg.	Closed Haz Waste Container Storage Area	Closed
2	Bldg. 622	Haz Waste Accumulation Area	Closed
3 A	Bldg. 101	Chrome Painting Haz Waste SAS	Active
3 B	Navy Parking Lot	Former Scrap Yard Haz Waste SAS	Closed
3 C	Bldg. 101	Machine Shop Parts Washer	Active
3 D	Bldg. 429	Tool Room Parts Washer	Active
3 E	Bldg. 528	Crane Maintenance Parts Washer	Closed
3 F	Bldg. 513	Rigger Room Parts Washer	Closed
3 G	Bldg. 616	Former Machine Shop Parts Washer	Closed
3 H	Former Bldg. 621	SHA Former Flush Shop Parts Washer	Closed
4	Bldg. 513	Compressor Room UST's	Closed
5	Bldg. 513	Compressor Room O/W Separator	Active
6	Bldg. 527	AST Farm	Active
7	Bldg. 513	WW Treatment System & Sludge Dumpster	Active
8		VPDES Outfalls (Void)	
9	Bldg. 616	Former Concrete Tanks	Closed
10	Navy Parking Lot	Former Scrap Yard	Closed
11	Navy Parking Lot	Scrap Yard Spent Blast Grit Hut	Closed
12 A	Bldg. 101	Chrome Plating Scrubber Air Stack	Active
12 B	Pier No. 1	Former Steam Boiler	Closed
12 C	Bldg. 301	Two Steam Boilers	Active
12 D	Bldg. 513	Compressor Room Two Steam Boilers	Active
13	Water Front	Piers and Drydocks	Active
14	Bldg. 550	Blasting and Painting Enclosures/Pads	Active
15	Near Former Bldg. 622	SHA Former Blast Storage Area	Closed
16	Near Former Bldg. 621	SHA Former Scrap Yard	Closed
17	Bldg. 625	Former Asbestos Containment Rolloff	Closed
18	Bldg. 424	Former Silver Recovery Unit	Closed
19 A	Bldg. 513	Carpentry Shop	Active
19 B	Bldg. 202	Blacksmith Shop	Active
19 C	Bldg. 514	Paint Booth	Inactive
19 D	Bldg. 514	Wheelabrator	Closed
20	Blocking Equipment Storage Area	Former Outdoor Small Parts Blasting/Painting Area	Closed
21	Yard Wide	Trash Dumpsters and Portapotties	Active

LEGEND

- EXISTING GW MONITORING WELL
- PROPOSED MONITORING WELL
- SITE BOUNDARY
- ST. HELENA ANNEX BOUNDARY
- SWMW — SITE WIDE MONITORING WELL
- RA — RELEASE ASSESSMENT MONITORING WELL
- E-MW — EXISTING MONITORING WELL

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IN CHARGE OF _____

DESIGNED BY _____ CHECKED BY _____

DRAWN BY _____

1"=300' 150 0 150 300

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS INC.

BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILITY LEAD PROGRAM
EPA ID NO. VAD003175072
NORFOLK, VIRGINIA 23523

PROPOSED MONITORING WELLS FACILITY WIDE BASELINE EVALUATION & RELEASE ASSESSMENT

FILE NO. 12674.38119-003

DATE JUNE 2007

3

Apr 23, 2008 - 4:18pm

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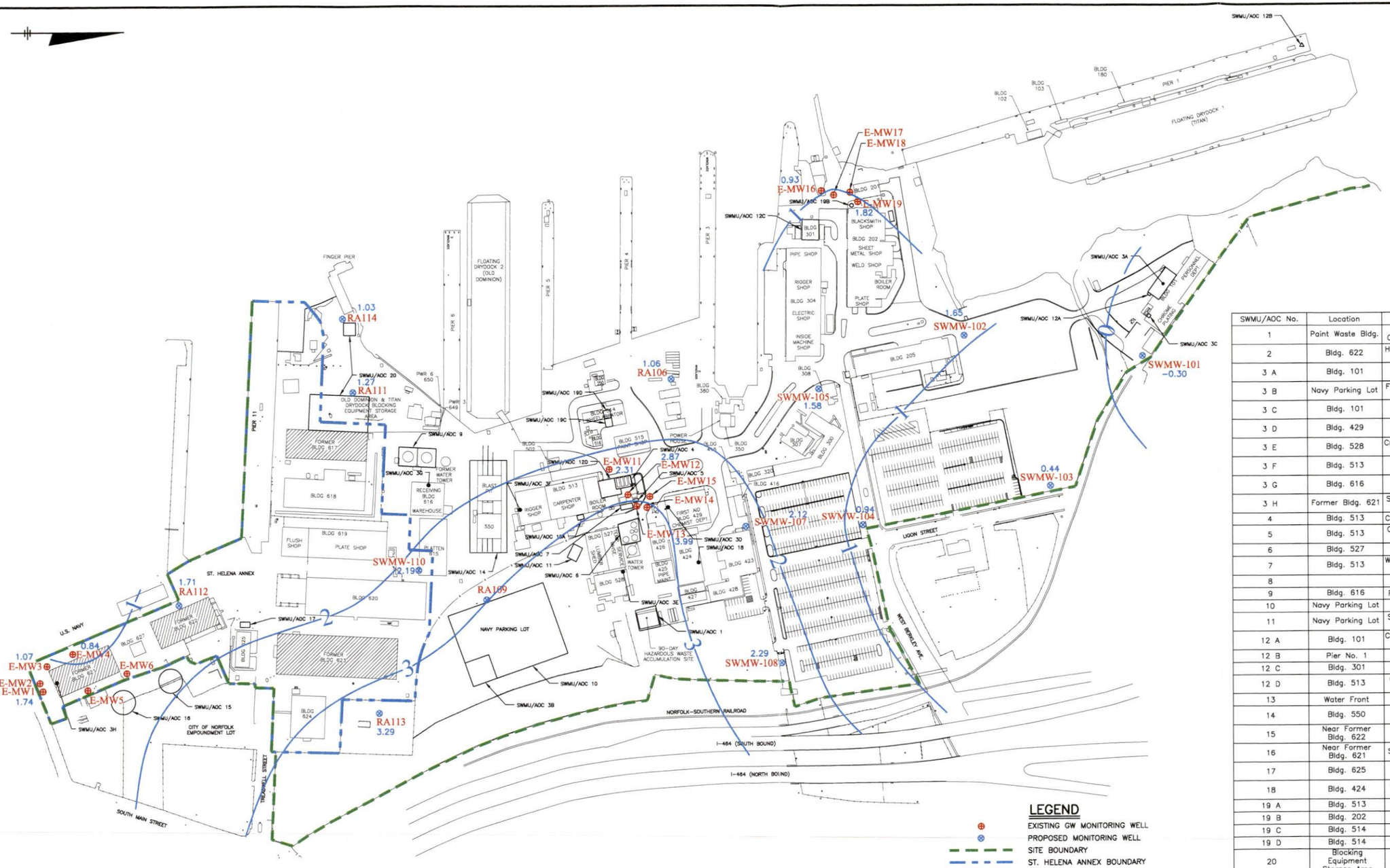

SWMU/AOC No.	Location	SWMU/AOC Name	Status
1	Paint Waste Bldg.	Closed Haz Waste Container Storage Area	Closed
2	Bldg. 622	Haz Waste Accumulation Area	Closed
3 A	Bldg. 101	Chrome Painting Haz Waste SAS	Active
3 B	Navy Parking Lot	Former Scrap Yard Haz Waste SAS	Closed
3 C	Bldg. 101	Machine Shop Parts Washer	Active
3 D	Bldg. 429	Tool Room Parts Washer	Active
3 E	Bldg. 528	Crane Maintenance Parts Washer	Closed
3 F	Bldg. 513	Rigger Room Parts Washer	Closed
3 G	Bldg. 616	Former Machine Shop Parts Washer	Closed
3 H	Former Bldg. 621	SHA Former Flush Shop Parts Washer	Closed
4	Bldg. 513	Compressor Room UST's	Closed
5	Bldg. 513	Compressor Room O/W Separator	Active
6	Bldg. 527	AST Farm	Active
7	Bldg. 513	WW Treatment System & Sludge Dumpster	Active
8		VPDES Outfalls (Void)	
9	Bldg. 616	Former Concrete Tanks	Closed
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11	Navy Parking Lot	Scrap Yard Spent Blast Grit Hut	Closed
12 A	Bldg. 101	Chrome Plating Scrubber Air Stack	Active
12 B	Pier No. 1	Former Steam Boiler	Closed
12 C	Bldg. 301	Two Steam Boilers	Active
12 D	Bldg. 513	Compressor Room Two Steam Boilers	Active
13	Water Front	Piers and Drydocks	Active
14	Bldg. 550	Blasting and Painting Enclosures/Pads	Active
15	Near Former Bldg. 622	SHA Former Blast Storage Area	Closed
16	Near Former Bldg. 621	SHA Former Scrap Yard	Closed
17	Bldg. 625	Former Asbestos Containment Rolloff	Closed
18	Bldg. 424	Former Silver Recovery Unit	Closed
19 A	Bldg. 513	Carpentry Shop	Active
19 B	Bldg. 202	Blacksmith Shop	Active
19 C	Bldg. 514	Paint Booth	Inactive
19 D	Bldg. 514	Wheelabrator	Closed
20	Blocking Equipment Storage Area	Former Outdoor Small Parts Blasting/Painting Area	Closed
21	Yard Wide	Trash Dumpsters and Portapotties	Active

LEGEND

- EXISTING GW MONITORING WELL
- PROPOSED MONITORING WELL
- SITE BOUNDARY
- ST. HELENA ANNEX BOUNDARY
- SWMW — SITE WIDE MONITORING WELL
- RA — RELEASE ASSESMENT MONITORING WELL
- E-MW — EXISTING MONITORING WELL
- DATUM IS NGVD
- CONTOUR INTERVAL - 1 FOOT
- 2 — CONTOUR LINE

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IN CHARGE OF _____

DESIGNED BY _____ CHECKED BY _____

DRAWN BY _____

1"=300' 150 0 150 300

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS INC.

BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILITY LEAD PROGRAM
EPA ID NO. VAD003175072
NORFOLK, VIRGINIA 23523

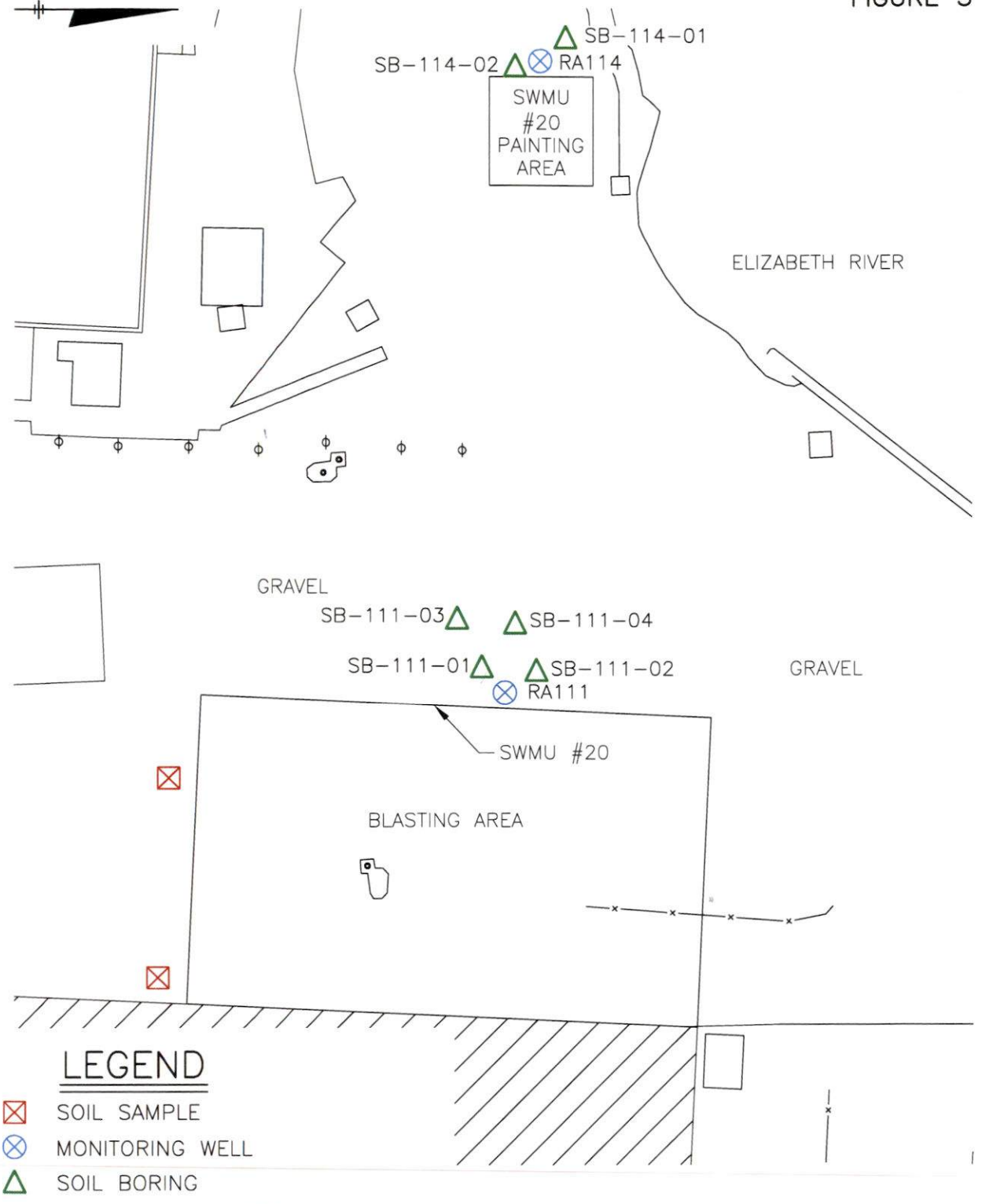
GROUND WATER CONTOUR MAP
FACILITY WIDE BASELINE EVALUATION
12/26/2007

FILE NO. 12674.38119.100.001

DATE APRIL 2008

4

FIGURE 5



BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILITY LEAD PROGRAM
NORFOLK, VIRGINIA

FWBE & RELEASE ASSESSMENT ADDENDUM SOIL SAMPLE LOCATIONS SWMU/AOC #20 – FORMER SMALL PARTS BLASTING/PAINTING AREA

12674.38119-024
DECEMBER 2008

1"=50'

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O'BRIEN & GERE ENGINEERS INC.

Dec 23, 2008 - 3:10pm

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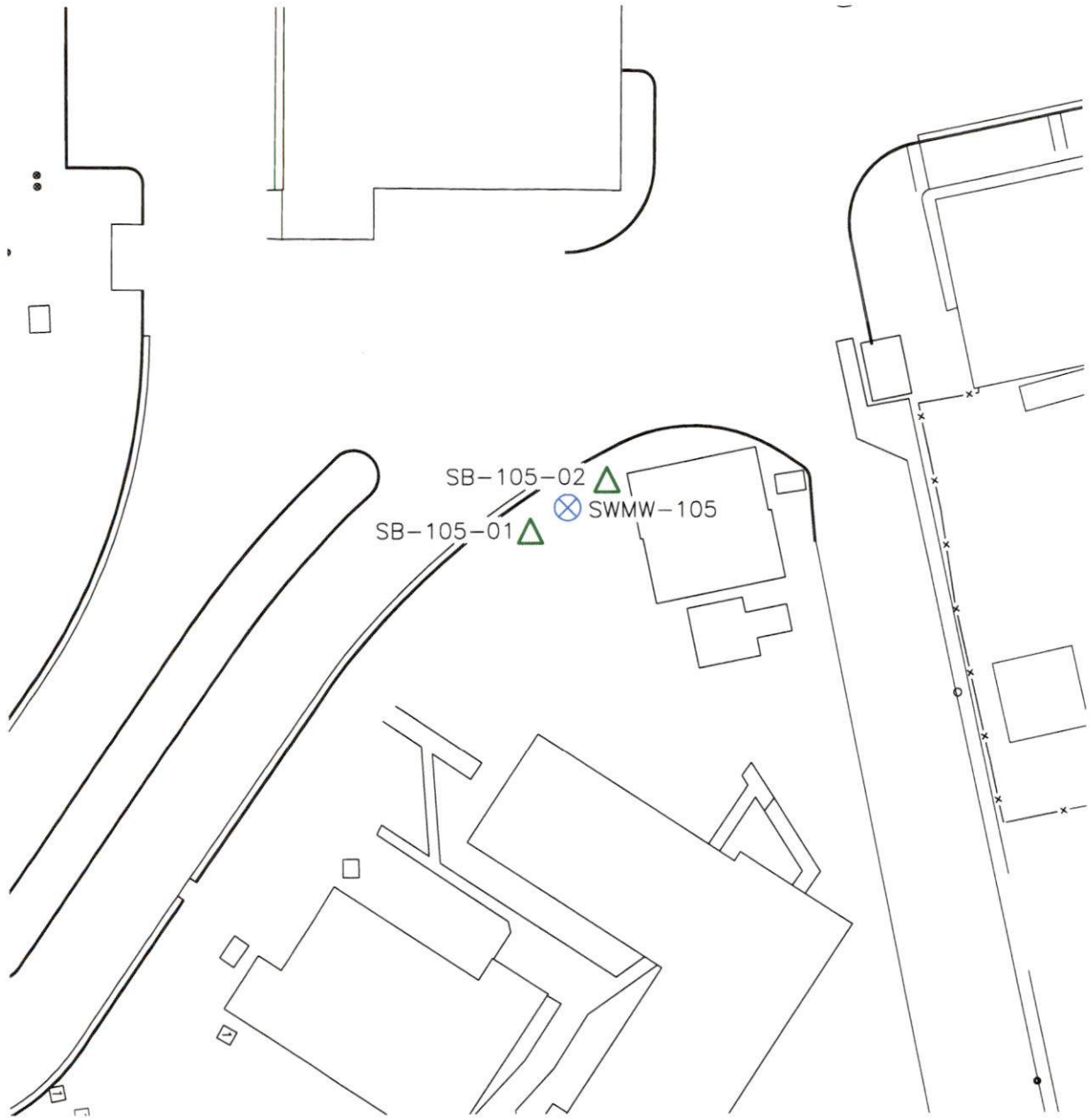
FIGURE 6



LEGEND

⊗ MONITORING WELL

△ SOIL BORING

BAE SYSTEMS NORFOLK SHIP REPAIR
RCRA FACILITY LEAD PROGRAM
NORFOLK, VIRGINIA

FWBE & RELEASE ASSESSMENT ADDENDUM SOIL SAMPLE LOCATIONS
SWMW-105

12674.38119-024
DECEMBER 2008

1"=50' 50 0 50

O'BRIEN & GERE ENGINEERS INC.

Dec 23, 2008 - 4:13pm

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APPENDIX A

Records of Subsurface Exploration

Addendum Soil Sampling Logs

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-105-01
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. North of Monitoring Well SWMU-105 Sampled: 7/22/2008 0914 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 2.0	1.9	**SAND** - very fine to fine grained, with some fine to medium; black (Gley 1 2.5/N) grading downward to light gray (10YR 7/2); scattered small quartz and granite gravel to 0.05'; isolated brick fragments; slightly silty in zones; grass and root zone at top; abundant coal gravel; Fill Material.	SP		
2.0	2	2.0 - 5.5	3.4				
3.0				**SILTY SAND** - very fine grained; reddish black (2.5YR 2.5/1) grading downward to pinkish gray (5YR 6/2); some very fine-grained heavy minerals; organic material and rootlets top 0.6'; moist to damp.	SM	X	

X Soil Sample SB-105-01-SL01

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-105-01 Location: 5' North of Monitoring Well SWMU-105	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
5.0				SILTY SAND	SM		3.2
5.5				Total Depth 5.5 Ft.			
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

Munsell Color Chart Description

Approximate Groundwater Level 12/26/2007

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-105-02
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. South of Monitoring Well SWMU-105 Sampled: 7/22/2008 0943 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 2.0	2.0	**SAND** - very fine to fine grained, with some fine to medium; very dark gray (5YR 3/1) grading downward to grayish brown (10YR 5/2); scattered small quartz gravel to 0.03'; isolated brick fragments; slightly silty in zones; grass and root zone at top; Fill Material.	SP		
0.5							
1.0							
1.5				**SAND** - fine grained with some fine to medium; gray (10YR 6/3); clean; good sorting; rounded; dry; Fill Material.	SP		
2.0	2	2.0 - 5.5	3.1				
				ROOT	PT		
2.5				**SILTY SAND** - fine to very fine grained; black (Gley 1 2.5/N) grading downward to very dark gray (10YR 3/1) and then gray (10YR 6/1); scattered coal gravel to 0.02'; dry; Fill Material.	SM		
3.0							
3.5							
4.0				**SILTY CLAY** - dark reddish gray (5YR 4/2); decreasing clay with depth; sandy in basal 0.5', very fine grained; iron oxide staining; scattered rootlets.	CL	X	
4.5							

X Soil Sample SB-105-02-SL01

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-105-02 Location: 5' South of Monitoring Well SWMU-105	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
				SILTY CLAY	CL		1.3
5.0				SANDY CLAY - very fine grained; gray (5YR 6/1); iron oxide staining; moist.	CL		
5.5				Total Depth 5.5 Ft.			
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

Munsell Color Chart Description

Approximate Groundwater Level 12/26/2007

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-111-01
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. South of Monitoring Well RA-111 Sampled: 7/22/2008 1205 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen / Riser; Grout / Sand Pack / Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	3.1	**SAND and GRAVEL** - fine to very coarse grained; granite gravel to 0.03"; very pale brown (10YR 7/3); loose; dry; Road Bed.	SP		
1.5				**SAND** - fine to very coarse grained; greenish gray (Gley 1 5/5GY); scattered gravel and brick fragments; dry; slight odor; Fill Material.	SP		
2.0				**SILTY SAND** - fine grained; very dark grayish brown (2.5Y 3/2); odor.	SM		
				SANDY SILT - very dark grayish brown (10YR 3/2); fine grained; slightly clayey.	ML		
2.5				**COAL**	PT		
				BRICK			
3.0	2	3.0 - 7.0	4.9	**SILTY SAND** - very fine grained; very dark grayish brown (10YR 3/2); abundant coal and brick fragments; dry; loose.	SM		
4.0				**SILTY SAND** - fine to very fine grained; dark gray (10YR 4/1); brick fragments; clayey in basal portion.	SM		3.8
4.5				**SILTY CLAY** - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes; 3.0 to 4.6 ppm PID from scan of core.	CL		

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-111-01 Location: 5' South of Monitoring Well RA-111	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
					▼		
5.0						X	
				SILTY CLAY - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes; 3.0 to 4.6 ppm PID from scan of core.	CL		27.7
5.5							
6.0							
				SANDY SILT - very fine grained; dark gray (10YR 4/1); medium dense; slightly clayey; slight odor; isolated fuel oil; abundant rootlet holes; iron oxide mottling.	SM		
6.5							
7.0				Total Depth 7.0 Ft.			
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

X Soil Sample SB-111-01-SL01

Munsell Color Chart Description

Groundwater Level 07/22/2008 ▼

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-111-02
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. West of Monitoring Well RA-111 Sampled: 7/22/2008 1205 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	3.1	**SAND and GRAVEL** - fine grained; granite gravel to 0.03"; very pale brown (10YR 7/3); loose; dry; Road Bed.	SP		
0.5							
1.0							
1.5							
2.0				**SAND** - fine grained; grayish brown (10YR 5/2); abundant gravel; coal fragments; slight odor; dry; loose.	SP		
2.5							
3.0	2	3.0 - 7.0	3.7	**SILTY SAND** - very fine grained, isolated very coarse; yellowish brown (10YR 5/4); slightly clayey; dry; slight odor.	SM		
3.5							
4.0				**SILTY CLAY** - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes.			
4.5							

Soil Sample SB-111-02-SL01

Groundwater Level 07/22/2008

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-111-02 Location: 5' West of Monitoring Well RA-111	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
					▼		
5.0							
				SILTY CLAY - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes.			
5.5							
6.0							
				SILTY SAND - fine and very fine grained; dark gray (10YR 4/1); good sorting; medium dense; slightly clayey; slight odor; isolated fuel oil; abundant rootlet holes; iron oxide mottling.	ML		5.5
6.5							
7.0				Total Depth 7.0 Ft.			
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

 Soil Sample SB-111-02-MS-SL01

Soil Sample SB-111-02-MSD-SL01 

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-111-03
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 15 Ft. South of Monitoring Well RA-111 Sampled: 7/22/2008 1220 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	2.3				
0.5				**SAND and GRAVEL** - fine grained; granite gravel to 0.03"; very pale brown (10YR 7/3); loose; dry; Road Bed.	SP		
1.0							
1.5							
2.0				**SAND** - fine grained; very dark gray (10YR 3/1); scattered gravel and brick fragments; dry; oil stained; Fill Material.	SP		
2.5				**SAND** -very fine grained; white (Gley 1 8/N); dry; loose; slight odor.	SP		
3.0	2	3.0 - 7.0	3.5	**SILTY SAND** - very fine grained; very dark grayish brown (10YR 3/2) to black (10YR 2/1); abundant quartz and coal gravel; oil stained.	SM		137
3.5				**SAND** - fine grained; very pale brown (10YR 7/4) to dark grayish brown (10YR 3/2); basal gravel; slight odor.	SP		
4.0							
4.5				**SILTY CLAY** - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in abundant rootlet holes.	CL		

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-111-03 Location: 15' South of Monitoring Well RA-111	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
					▼		
5.0							
				SILTY CLAY - dark olive gray (5Y 3/2); stiff to very stiff; slightly sandy, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes.	CL	X	74.7
5.5							
6.0							
6.5				**SANDY SILT** - very fine grained; color as above; few rootlets; clayey; slight odor; fuel oil LNPL in numerous rootlet holes.			183
7.0				Total Depth 7.0 Ft.			
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

X Soil Sample SB-111-03-SL01

Munsell Color Chart Description

Groundwater Level 07/22/2008 ▼

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-111-04
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 15 Ft. West of Monitoring Well RA-111 Sampled: 7/22/2008 1239 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser \ Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	2.7	**SAND and GRAVEL** - fine to very coarse grained; gravel to 0.08"; light brownish gray (10YR 6/2) to light gray (10YR 7/2); loose; dry ; road base.	GP		
0.5							
1.0				**SAND and GRAVEL** - very fine grained; quartz gravel to 0.03"; light gray (10YR 7/2) to very dark grayish brown (10YR 3/2); abundant brick and coal fragments; scattered clayey sand; strong odor; dry; loose to medium dense; Fill Material.	SP		
1.5							
2.0					2.0		30.3
2.5				**SAND and GRAVEL** - same as above; oil stained 2.0 to 3.5 Ft.	SP		
3.0	2	3.0 - 7.0	2.8				
3.5					3.5		
4.0				**SAND and GRAVEL** - same as above; silty and oil stained basal 0.5 Ft.	SP		40.4
4.5				**BRICK**	FILL		

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-111-04 Location: 15' West of Monitoring Well RA-111	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
				BRICK	▼		
5.0							
				SILTY CLAY - dark gray (10YR 4/1); iron oxide mottling; stiff to very stiff; slightly sandy in lower portion, very fine grained; slight odor; fuel oil LNPL in numerous rootlet holes.	CL	☒	
6.0							
				SANDY SILT - very fine grained; dark gray (10YR 4/1); medium dense; slightly clayey; slight odor; isolated fuel oil; abundant rootlet holes; iron oxide mottling.	ML		37.9
6.5							
7.0				Total Depth 7.0 Ft.			
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

☒ Soil Sample SB-111-04SL01

Munsell Color Chart Description

Groundwater Level 07/22/2008 ▼

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-114-01
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. West of Monitoring Well RA-114 Sampled: 7/22/2008 1045 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser \ Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	2.6	**SAND and GRAVEL** - fine to very coarse grained; granite gravel to 0.03"; very pale brown (10YR 7/3); loose; dry; Road Bed.	SP		
0.5				**SAND** - fine to very coarse grained; greenish gray (Gley 1 5/5GY); scattered gravel and brick fragments; dry; coal fragments; Fill Material.	SP		
1.0							
1.5							
2.0							
2.5				**SILTY SAND** - fine grained; very dark grayish brown (2.5Y 3/2); scattered coal, brick, granite, and quartz gravel.	SM		
3.0	2	3.0 - 7.0	2.4	**CONCRETE**	FILL		
3.5							
4.0				**SLIGHTLY SILTY SAND** - fine grained; very dark bluish gray (Gley 2 3/5PB); scattered sand layeres; abundant quartz, granite, and coal gravel; abundant brick fragments.	SP		
4.5							

O'BRIEN & GERE ENGINEERS, INC.	Subsurface Investigation Record	BORING LOG SB-114-02
Client: BAE Systems / NSR Proj. Loc.: BAE / NSR W. Berkley Ave. File No.: 38119.100.001	Rig: Geoprobe Model 5410 Tools: 4" x 2" MacroCore Sampler Well Borehole: 3 "	Page 1 of 2 Location: 5 Ft. South of Monitoring Well RA-114 Sampled: 7/22/2008 1114 Hrs. Well Installed: None
Drilling Company: Fishburne Drilling, Inc. Foreman: Eric Neace OBG Geologist: Conrad Lawrence		Screen = Riser \ Grout Sand Pack Bentonite

Depth Below Grade	Sample No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
0	1	0.0 - 3.0	2.7	**SAND** - fine grained; scattered quartz and granite gravel to 0.02"; very pale brown (10YR 7/3); loose; dry; roots.	SP		
0.5							
1.0				**SAND** - fine to very coarse grained; greenish gray (Gley 1 5/5GY); scattered gravel and brick fragments; dry; coal fragments; Fill Material.	SP		
1.5							
2.0				**SILTY SAND** - fine grained; very dark grayish brown (2.5Y 3/2); scattered coal, brick, granite, and quartz gravel.	SM		
2.5				**Brick**			
3.0	2	3.0 - 7.0	2.8	**SILTY SAND** - very fine grained; greenish black (Gley 2 3/5PB); brick and concrete fragments; dry.	SM		
3.5							
4.0				**SILTY SILTY SAND** - fine to very fine grained; brown (7.5YR 4/3); abundant coal and brick fragments; scattered quartz gravl; moist.	SM		
4.5							

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG SB-114-02 Location: 5' South of Monitoring Well RA-114	Page 2 of 2 File No: 38119.100.001

Depth Below Grade	No.	Sample Depth (feet)	Sample Rec. (feet)	Sample / Unit Description	Stratum Change General Descript	Soil Samples	PID (ppm)
				SILTY SILTY SAND	SM		
5.0							0.5
5.5				CLAYEY SAND - very fine grained; very dark greenish gray (Gley 2 3/5BG); brick fragemnts; wet to saturated in the lower portion.	SC		
6.0							
6.5							
7.0				Total Depth 7.0 Ft.			
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

Notes:

 Soil Sample SB-114-02-SL01

Munsell Color Chart Description

Groundwater Level 07/22/2008

APPENDIX B

Addendum Groundwater Sampling Forms

MONITORING WELL INSPECTION LOG

I. **Note: A separate inspection sheet is required for each monitoring well.**

Monitoring Well Number: **RA-111**

A. Inspected by (full name): Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

B. Date/Time of Inspection: 7/22/2008 1531 Hrs.

C. Inspection Observations (note condition/observations for the following);

1. Locking protective casing: Flush Mount; lock on compression cap.

2. Concrete well pad: Yes, good shape, wood form coming apart.

3. Lock: Yes; rusty.

4. Erosion: None.

5. Exterior well ID number: None; Well ID on inside of protector casing.

6. Inspection Comments: Both bolts on protector lid on tight. No water inside of protector.

D. Repair/Remediation Comments/Recommendations: None

E. Repair/Remediation Date:

GROUND WATER SAMPLE LOG

Sampling Event: FWBE - Follow-up Sampling July 2008
Location: BAE Systems / NSR
Well No.: **RA-111**
Weather: Calm, Sunny, Humid
Ambient Temperature: 98 Degrees F, Heat Index 103 degrees F.
Measurement Team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh
Time Well Casing Unlocked: 1531 Hrs.

Depth of Well from Top of Inner Casing	14.9	FT
Depth to Water from top of Inner Casing	4.63	FT
Depth to Oil from Top of Inner Casing	na	FT
Thickness of Product (T)	na	FT
Length of Water Column	10.3	FT

Measurement Technique
X Water level indicator
___ Oil/water interface probe
___ Other Explain: ___

Formulas for Determining Purge Volume

Water level above sand pack:
$3 \times [(\pi r_b^2 h_s - \pi r_c^2 h_s) \times 0.3 + (\pi r_c^2 h_w)]$

(1 Well Volume)

Water level below sand pack: 0.102 Cu Ft GW / 1 Ft GW Col
$3 \times [(\pi r_b^2 h_w - \pi r_c^2 h_w) \times 0.3 + (\pi r_c^2 h_w)]$ 0.76 Gal GW / 1 Ft GW Col

where:

r_b =	radius of boring	=	0.30 ft
r_c =	radius of casing	=	0.088 ft
h_s =	height of sand	=	13 ft
h_w =	height of water	=	10.3

Amount of water to be purged: 23.5 gallons

Immiscible Layer present:		Yes	X	No		
Detection Method:	X	Visual		O/W interface		Other
Collection Method:	X	Beaker		Other (Bailer)		
Observation:		Color		Odor		Other

Purge Team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Purge Procedure/Equipment: ___ Bailer X Pump
Purge Time: 1547 to 1551
Purge Volume: 12 gallons Did well go dry? X Yes ___ No

Purge Water Appearance (initial/final):
Color Dark Gray / Medium Gray Clarity Opaque / Slightly Opaque
Odor Moderate / Moderate Particulate Abundant Fine Sand / Moderate Fine Sand

Comments: Observed isolated petroleum sheen on development water when taking field parameters.

GROUND WATER SAMPLE LOG (continued)

Sampling event: FWBE - Follow-up Sampling July 2008

Well no.: **RA-111** Date: 7/22/2008 Sample time 1553 Hrs.

Sampling team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Sampling procedures/equipment: ____ Bailer X Pump

pH meter calibrated with buffers 4.00 7.00 ____

pH meter calibrated by: Conrad Lawrence

Conductivity meter calibrated with standard solution of 1.413 M Potassium Chloride mSiemens/cm

Conductivity meter calibrated by: Conrad Lawrence

	1st Volume	2nd Volume	3rd Volume	Final
pH (Standard Units)	6.67			6.78
Temperature (C)	25.5			24.6
Conductivity (mS/cm)	1.06			1.05
Turbidity (NTUs)	499			Ins. Mal.
TDS (ppt)	0.53			0.53

Sample collection time/container*/preservative

(1)	VOC (G/HCl)	(2)	TOX (A/HNO_3)
(3)	TOC (A/H_2SO_4)	(4)	COD (A/H_2SO_4)
(5)	O&G/TPH (A/HCl)	(6)	PHEN (A/H_2SO_4)
(7)	N (P/None)	(8)	PHOS (A/H_2SO_4)
(9)	SO (P/None)	(10)	TMET (P/HNO_3)
(11)	DMET (P/None)	(12) X	pH, Cond (Field)
(13)	Chloride (None)	(14)	Small Tst (P/None)
(15) X	SVOC / PAHs (G/None)	(16)	Phenolics (A/H2SO4

Locked well at: 1400 Hrs.

Comments: A LaMotte Turbidity Meter (Model 2020) was also used. The Turbidity Meter was calibrated to 1.0 a

10.0 NTUs at Well RA-114.

* G=Glass, A=Amber glass bottle, P=Plastic (polyethylene)

MONITORING WELL INSPECTION LOG

I. **Note: A separate inspection sheet is required for each monitoring well.**

Monitoring Well Number: RA-114

A. Inspected by (full name): Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

B. Date/Time of Inspection: 7/22/2008 1452 Hrs.

C. Inspection Observations (note condition/observations for the following);

1. Locking protective casing: Flush Mount; lock on compression cap.

2. Concrete well pad: Yes, good shape, wood form coming apart.

3. Lock: Yes, rusty.

4. Erosion: None.

5. Exterior well ID number: None; Well ID on inside of protector casing.

6. Inspection Comments: Both bolts on protector lid on tight. No water inside of protector.

D. Repair/Remediation Comments/Recommendations: None

E. Repair/Remediation Date:

GROUND WATER SAMPLE LOG

Sampling Event: FWBE - Follow-up Sampling July 2008
Location: BAE Systems / NSR
Well No.: **RA-114**
Weather: Calm, Sunny, Humid
Ambient Temperature: 98 Degrees F, Heat Index 103 degrees F.
Measurement Team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh
Time Well Casing Unlocked: 1452 Hrs.

Depth of Well from Top of Inner Casing	15.0	FT
Depth to Water from top of Inner Casing	6.05	FT
Depth to Oil from Top of Inner Casing	na	FT
Thickness of Product (T)	na	FT
Length of Water Column	8.95	FT

Measurement Technique
X Water level indicator
___ Oil/water interface probe
___ Other Explain: ___

Formulas for Determining Purge Volume

Water level above sand pack:
$3 \times [(\pi r_b^2 h_s - \pi r_c^2 h_s) \times 0.3 + (\pi r_c^2 h_w)]$

(1 Well Volume)

Water level below sand pack: 0.102 Cu Ft GW / 1 Ft GW Col
$3 \times [(\pi r_b^2 h_w - \pi r_c^2 h_w) \times 0.3 + (\pi r_c^2 h_w)]$ 0.76 Gal GW / 1 Ft GW Col

where:

r_b =	radius of boring	=	0.30 ft
r_c =	radius of casing	=	0.088 ft
h_s =	height of sand	=	13 ft
h_w =	height of water	=	8.9

Amount of water to be purged: 20.3 gallons

Immiscible Layer present:		Yes	X	No		
Detection Method:	X	Visual		O/W interface		Other
Collection Method:	X	Beaker		Other (Bailer)		
Observation:		Color		Odor		Other

Purge Team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Purge Procedure/Equipment:		Bailer	X	Pump	
Purge Time:	1455 to 1503 Hrs.				
Purge Volume:	9 gallons	Did well go dry?	X	Yes	No

Purge Water Appearance (initial/final):

Color	Dark Gray / Medium Gray	Clarity	Opaque / Slightly Opaque
Odor	Slight / Slight	Particulate	Some Sand / Some Sand

Comments: Very low recharge.

GROUND WATER SAMPLE LOG (continued)

Sampling event: FWBE - Follow-up Sampling July 2008

Well no.: **RA-114** Date: 7/22/2008 Sample time 1505 Hrs.

Sampling team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Sampling procedures/equipment: ____ Bailer X Pump

pH meter calibrated with buffers 4.00 7.00 ____

pH meter calibrated by: Conrad Lawrence

Conductivity meter calibrated with standard solution of 1.413 M Potassium Chloride mSiemens/cm

Conductivity meter calibrated by: Conrad Lawrence

	1st Volume	2nd Volume	3rd Volume	Final
pH (Standard Units)	6.87			6.96
Temperature (C)	22.8			23.3
Conductivity (mS/cm)	0.78			0.78
Turbidity (NTUs)	769			Ins. Mal.
TDS (ppt)	0.39			0.39

Sample collection time/container*/preservative

(1)	VOC (G/HCl)	(2)	TOX (A/HNO_3)
(3)	TOC (A/H_2SO_4)	(4)	COD (A/H_2SO_4)
(5)	O&G/TPH (A/HCl)	(6)	PHEN (A/H_2SO_4)
(7)	N (P/None)	(8)	PHOS (A/H_2SO_4)
(9)	SO (P/None)	(10)	TMET (P/HNO_3)
(11)	DMET (P/None)	(12) X	pH, Cond (Field)
(13)	Chloride (None)	(14)	Small Tst (P/None)
(15) X	SVOC / PAHs (G/None)	(16)	Phenolics (A/H2SO4

Locked well at: 1519 Hrs.

Comments: A LaMotte Turbidity Meter (Model 2020) was also used. The Turbidity Meter was calibrated to 1.0 a

10.0 NTUs.

* G=Glass, A=Amber glass bottle, P=Plastic (polyethylene)

MONITORING WELL INSPECTION LOG

I. **Note: A separate inspection sheet is required for each monitoring well.**

Monitoring Well Number: **SWMU-102**

A. Inspected by (full name): Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

B. Date/Time of Inspection: 7/22/2008 1612 Hrs.

C. Inspection Observations (note condition/observations for the following);

1. Locking protective casing: Flush Mount; lock on compression cap.

2. Concrete well pad: No - completed on asphalt

3. Lock: Yes

4. Erosion: None

5. Exterior well ID number: None; Well ID on inside of protector casing.

6. Inspection Comments: Broke both bolts on flush-mount protector lid. No water inside of protector.

D. Repair/Remediation Comments/Recommendations: Replace broken bolts. Will require drilling out old bolt ends

E. Repair/Remediation Date:

GROUND WATER SAMPLE LOG

Sampling Event:	FWBE - Follow-up Sampling July 2008
Location:	BAE Systems / NSR
Well No.:	**SWMU-102**
Weather:	Calm, Sunny, Humid
Ambient Temperature:	98 Degrees F, Heat Index 103 degrees F.
Measurement Team:	Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh
Time Well Casing Unlocked:	1612 Hrs.

Depth of Well from Top of Inner Casing	14.7	FT
Depth to Water from top of Inner Casing	3.33	FT
Depth to Oil from Top of Inner Casing	na	FT
Thickness of Product (T)	na	FT
Length of Water Column	11.4	FT

Measurement Technique
- X — Water level indicator
- ____ — Oil/water interface probe
- ____ — Other Explain: ____

Formulas for Determining Purge Volume

Water level above sand pack:

$3 \times [(\pi r_b^2 h_s - \pi r_c^2 h_s) \times 0.3 + (\pi r_c^2 h_w)]$

Water level below sand pack:

$3 \times [(\pi r_b^2 h_w - \pi r_c^2 h_w) \times 0.3 + (\pi r_c^2 h_w)]$

(1 Well Volume)
0.102 Cu Ft GW / 1 Ft GW Col
0.76 Gal GW / 1 Ft GW Col

where:

r_b =	radius of boring	=	0.30 ft
r_c =	radius of casing	=	0.088 ft
h_s =	height of sand	=	13 ft
h_w =	height of water	=	11.4

Amount of water to be purged: 26.0 gallons

Immiscible Layer present:	____	Yes	X	No		
Detection Method:	X	Visual	____	O/W interface	____	Other
Collection Method:	X	Beaker	____	Other (Bailer)		
Observation:	____	Color	____	Odor	____	Other

Purge Team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Purge Procedure/Equipment:	____	Bailer	X	Pump	
Purge Time:	1615 to 1625 Hrs.				
Purge Volume:	27 gallons	Did well go dry?	____	Yes	X No

Purge Water Appearance (initial/final):

Color	Black / Very Dark Gray	Clarity	Opaque / Very Turbid
Odor	Slight / Slight	Particulate	Abundant Fine to Medium Sand / Some Sand

Comments: Well completed in Blast Sand. Pumped continuously at maximum pump rate at about 2.0 gpm.

GROUND WATER SAMPLE LOG (continued)

Sampling event: FWBE - Follow-up Sampling July 2008

Well no.: **SWMU-102** Date: 7/22/2008 Sample time 1626 Hrs.

Sampling team: Conrad Lawrence, Tina Bickerstaff, Steve Bulleigh

Sampling procedures/equipment: _____ Bailer **X** Pump

pH meter calibrated with buffers 4.00 7.00 _____

pH meter calibrated by: Conrad Lawrence (Meter calibrated at Well RA-114) (Hanna 991301)

Conductivity meter calibrated with standard solution of 1.413 M Potassium Chloride mSiemens/cm

Conductivity meter calibrated by: Conrad Lawrence (Meter calibrated at Well RA-114) (Hanna 991301)

	1st Volume	2nd Volume	3rd Volume	Final
pH (Standard Units)	7.53	7.50	7.49	7.48
Temperature (C)	31.7	31.5	31.3	31.2
Conductivity (mS/cm)	1.24	1.31	1.33	1.34
Turbidity (NTUs)	140	76.4	34.5	55.9
TDS (ppt)	0.62	0.65	0.66	0.67

Sample collection time/container*/preservative

(1)	_____ VOC (G/HCl)	(2)	_____ TOX (A/HNO_3)
(3)	_____ TOC (A/H_2SO_4)	(4)	_____ COD (A/H_2SO_4)
(5)	_____ O&G/TPH (A/HCl)	(6)	_____ PHEN (A/H_2SO_4)
(7)	_____ N (P/None)	(8)	_____ PHOS (A/H_2SO_4)
(9)	_____ SO (P/None)	(10)	_____ TMET (P/HNO_3)
(11)	_____ DMET (P/None)	(12)	X pH, Cond (Field)
(13)	_____ Chloride (None)	(14)	_____ Small Tst (P/None)
(15)	X SVOC / PAHs (G/None)	(16)	_____ Phenolics (A/H2SO4

Locked well at: 1638 Hrs.

Comments: A LaMotte Turbidity Meter (Model 2020) was also used. The Turbidity Meter was calibrated to 1.0 a

10.0 NTUs at Well RA-114.

* G=Glass, A=Amber glass bottle, P=Plastic (polyethylene)

APPENDIX C

Addendum Laboratory Analytical Report

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Thursday, August 14, 2008

Ms. Tina Bickerstaff
O'Brien & Gere Engineers, Inc
8401 Corporate Dr.
Suite 400
Landover, MD 20785

TEL: 301-731-5622

Project: BAE NORTHFOLK SHIP REPAIR
RE: Analytical Results Order No.: 0807109

Dear Ms. Tina Bickerstaff:

Life Science Laboratories, Inc. received 5 sample(s) on 7/24/2008 for the analyses presented in the following report.

Very truly yours,
Life Science Laboratories, Inc.

Anthony Crescenzi
Project Manager

CC:
Mr. Conrad Lawrence; O'Brien & Gere Engineers, Inc

Life Science Laboratories, Inc.
Brittonfield Lab

5[illegible] Brittonfield Parkway, Suite 200
East Syracuse, New York 13057
(315) 437-0200

Chain of Custody

Client: O'Brien & Gere Engineers
Project: BAE/NSR - FWBE Followup 38119.100.001
Sampled by: Conrad Lawrence, Tina Bickerstaff
Client Contact: Tina Bickerstaff Phone # 443/223-9368

Sample Description

Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Analysis/Method: PAHs 8270 SIM	Comments
SWMH-102-0708	7/24/08	1620	GW	G	2	2	
SWMH-102-MS-0708	↑	1620	GW	G	2	2	
SWMH-102-MSD-0708		1620	GW	G	2	2	
SWMH-152-0708		1630	GW	G	2	2	
RA-111-0708		1553	GW	G	2	2	
RA-114-0708	↓	1505	GW	G	2	2	
GWEB-01-0708	7/24/08	1700	W	G	2	2	

Relinquished by: [signature]	Date: 7/25/08	Time: 1846	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Lab: [signature] Date: 7/24/08 Time: 12:00
Shipment Method:			Airbill Number:

Turnaround Time Required:
Routine ____
Rush (Specify) X

Cooler Temperature: 1.6°C on ice
0.0°C

Comments: Sample RA-111-0708 → Development GW had isolated small globs of fuel oil
cc'd results to Conrad Lawrence

Original - Laboratory
Copy - Client

FedEx Ship Manager - Print Your Label(s)

Grant Matthews
OBRIEN & GERE
4435 Waterfront Drive

GLEN ALLEN, VA 230603331

ActWgt: 50 LB
System#: 8192691/INET8061
Account#: S *********

Dims: 24 X 24 X 36 IN

Delivery Address Bar Code

Ref # 38119.100.001
Invoice #
PO #
Dept #

SHIP TO: 3154370200 BILL SENDER

Tony Crescenzi/Sample receiving
Life Science Labs Inc-Brittonfield
5000 Brittonfield Parkway
Suite 200
East Syracuse, NY 13057

THU - 24JUL A1

TRK# 0201 7993 5629 6648

STANDARD OVERNIGHT

13057
NY-US
SYR

XH SYRA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.

I:117

119-FL3

1Z1135040365375 4409

PGV3LKG NYSYR166A Jul 24 03:53:59 2008
TB 1321 HIP 7.0.6 LP2844

Life Science Laboratories, Inc.

Sample Receipt Checklist

Client Name: OBG-LANDOVER

Date and Time Received: 7/24/2008 12:00:00 PM

Work Order Number 0807109

Received by: kac

Checklist completed by: TC 7/24/08 (Initials / Date)

Reviewed by: CL 7-24-08 (Initials / Date)

Matrix:

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Comments:

Corrective Action::

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807109-001A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SWMU-102-0708***
W Order:	0807109	**Collection Date:**	07/22/08 16:26
Matrix:	GROUNDWATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 940 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9671.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	4.09		0.213	0.0149	µg/L	1	07/30/08 21:21
Acenaphthene	6.82		0.213	0.0149	µg/L	1	07/30/08 21:21
Acenaphthylene	0.121	J	0.213	0.0117	µg/L	1	07/30/08 21:21
Anthracene	1.84		0.213	0.0170	µg/L	1	07/30/08 21:21
Benzo[a]anthracene	1.48		0.213	0.0160	µg/L	1	07/30/08 21:21
Benzo[a]pyrene	1.16		0.213	0.0138	µg/L	1	07/30/08 21:21
Benzo[b]fluoranthene	2.08		0.213	0.0160	µg/L	1	07/30/08 21:21
Benzo[g,h,i]perylene	0.511		0.213	0.0100	µg/L	1	07/30/08 21:21
Benzo[k]fluoranthene	0.812		0.213	0.0191	µg/L	1	07/30/08 21:21
Chrysene	1.37		0.213	0.0223	µg/L	1	07/30/08 21:21
Dibenz[a,h]anthracene	0.149	J	0.213	0.0128	µg/L	1	07/30/08 21:21
Fluoranthene	6.67		0.213	0.0181	µg/L	1	07/30/08 21:21
Fluorene	6.07		0.213	0.0170	µg/L	1	07/30/08 21:21
Indeno[1,2,3-cd]pyrene	0.448		0.213	0.0138	µg/L	1	07/30/08 21:21
Naphthalene	3.11		0.213	0.0104	µg/L	1	07/30/08 21:21
Phenanthrene	6.66		0.213	0.0138	µg/L	1	07/30/08 21:21
Pyrene	4.53		0.213	0.0170	µg/L	1	07/30/08 21:21
Surr: Terphenyl-d14	72.8		51-135	0	%REC	1	07/30/08 21:21

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim/Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:55 376549 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807109-002A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SWMU-152-0708***
W Order:	0807109	**Collection Date:**	07/22/08 16:30
Matrix:	GROUNDWATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 930 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9674.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	4.20		0.215	0.0151	µg/L	1	07/30/08 22:51
Acenaphthene	6.96		0.215	0.0151	µg/L	1	07/30/08 22:51
Acenaphthylene	0.133	J	0.215	0.0118	µg/L	1	07/30/08 22:51
Anthracene	2.11		0.215	0.0172	µg/L	1	07/30/08 22:51
Benzo[a]anthracene	2.43		0.215	0.0161	µg/L	1	07/30/08 22:51
Benzo[a]pyrene	1.70		0.215	0.0140	µg/L	1	07/30/08 22:51
Benzo[b]fluoranthene	2.82		0.215	0.0161	µg/L	1	07/30/08 22:51
Benzo[g,h,i]perylene	0.777		0.215	0.0101	µg/L	1	07/30/08 22:51
Benzo[k]fluoranthene	1.44		0.215	0.0194	µg/L	1	07/30/08 22:51
Chrysene	2.19		0.215	0.0226	µg/L	1	07/30/08 22:51
Dibenz[a,h]anthracene	0.225		0.215	0.0129	µg/L	1	07/30/08 22:51
Fluoranthene	8.03		0.215	0.0183	µg/L	1	07/30/08 22:51
Fluorene	6.37		0.215	0.0172	µg/L	1	07/30/08 22:51
Indeno[1,2,3-cd]pyrene	0.708		0.215	0.0140	µg/L	1	07/30/08 22:51
Naphthalene	3.22		0.215	0.0105	µg/L	1	07/30/08 22:51
Phenanthrene	7.34		0.215	0.0140	µg/L	1	07/30/08 22:51
Pyrene	5.83		0.215	0.0172	µg/L	1	07/30/08 22:51
Surr: Terphenyl-d14	77.5		51-135	0	%REC	1	07/30/08 22:51

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:55 376552 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807109-003A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*RA-111-0708*
W Order:	0807109	**Collection Date:**	07/22/08 15:53
Matrix:	GROUNDWATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 950 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9669.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	ND		0.211	0.0147	µg/L	1	07/30/08 20:22
Acenaphthene	1.26		0.211	0.0147	µg/L	1	07/30/08 20:22
Acenaphthylene	ND		0.211	0.0116	µg/L	1	07/30/08 20:22
Anthracene	0.155	J	0.211	0.0168	µg/L	1	07/30/08 20:22
Benzo[a]anthracene	0.0252	J	0.211	0.0158	µg/L	1	07/30/08 20:22
Benzo[a]pyrene	ND		0.211	0.0137	µg/L	1	07/30/08 20:22
Benzo[b]fluoranthene	ND		0.211	0.0158	µg/L	1	07/30/08 20:22
Benzo[g,h,i]perylene	0.0441	J	0.211	0.00989	µg/L	1	07/30/08 20:22
Benzo[k]fluoranthene	ND		0.211	0.0189	µg/L	1	07/30/08 20:22
Chrysene	0.0367	J	0.211	0.0221	µg/L	1	07/30/08 20:22
Dibenz[a,h]anthracene	ND		0.211	0.0126	µg/L	1	07/30/08 20:22
Fluoranthene	0.108	J	0.211	0.0179	µg/L	1	07/30/08 20:22
Fluorene	0.412		0.211	0.0168	µg/L	1	07/30/08 20:22
Indeno[1,2,3-cd]pyrene	ND		0.211	0.0137	µg/L	1	07/30/08 20:22
Naphthalene	ND		0.211	0.0103	µg/L	1	07/30/08 20:22
Phenanthrene	0.0417	J	0.211	0.0137	µg/L	1	07/30/08 20:22
Pyrene	0.374		0.211	0.0168	µg/L	1	07/30/08 20:22
Surr: Terphenyl-d14	58.3		51-135	0	%REC	1	07/30/08 20:22

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:55 376547 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807109-004A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***RA-114-0708***
W Order:	0807109	**Collection Date:**	07/22/08 15:05
Matrix:	GROUNDWATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 1000 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9663.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	ND		0.200	0.0140	µg/L	1	07/30/08 17:22
Acenaphthene	ND		0.200	0.0140	µg/L	1	07/30/08 17:22
Acenaphthylene	ND		0.200	0.0110	µg/L	1	07/30/08 17:22
Anthracene	0.0248	J	0.200	0.0160	µg/L	1	07/30/08 17:22
Benzo[a]anthracene	0.0170	J	0.200	0.0150	µg/L	1	07/30/08 17:22
Benzo[a]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 17:22
Benzo[b]fluoranthene	0.0494	J	0.200	0.0150	µg/L	1	07/30/08 17:22
Benzo[g,h,i]perylene	0.194	J	0.200	0.00940	µg/L	1	07/30/08 17:22
Benzo[k]fluoranthene	0.0201	J	0.200	0.0180	µg/L	1	07/30/08 17:22
Chrysene	0.0354	J	0.200	0.0210	µg/L	1	07/30/08 17:22
Dibenz[a,h]anthracene	ND		0.200	0.0120	µg/L	1	07/30/08 17:22
Fluoranthene	0.230		0.200	0.0170	µg/L	1	07/30/08 17:22
Fluorene	0.0266	J	0.200	0.0160	µg/L	1	07/30/08 17:22
Indeno[1,2,3-cd]pyrene	0.0417	J	0.200	0.0130	µg/L	1	07/30/08 17:22
Naphthalene	0.0116	J	0.200	0.00980	µg/L	1	07/30/08 17:22
Phenanthrene	0.0350	J	0.200	0.0130	µg/L	1	07/30/08 17:22
Pyrene	0.325		0.200	0.0160	µg/L	1	07/30/08 17:22
Surr: Terphenyl-d14	59.2		51-135	0	%REC	1	07/30/08 17:22

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:55 376541 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807109-005A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***GWEB-01-0708***
W Order:	0807109	**Collection Date:**	07/22/08 17:00
Matrix:	WATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 1000 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9664.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	ND		0.200	0.0140	µg/L	1	07/30/08 17:52
Acenaphthene	ND		0.200	0.0140	µg/L	1	07/30/08 17:52
Acenaphthylene	ND		0.200	0.0110	µg/L	1	07/30/08 17:52
Anthracene	ND		0.200	0.0160	µg/L	1	07/30/08 17:52
Benzo[a]anthracene	ND		0.200	0.0150	µg/L	1	07/30/08 17:52
Benzo[a]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 17:52
Benzo[b]fluoranthene	ND		0.200	0.0150	µg/L	1	07/30/08 17:52
Benzo[g,h,i]perylene	ND		0.200	0.00940	µg/L	1	07/30/08 17:52
Benzo[k]fluoranthene	ND		0.200	0.0180	µg/L	1	07/30/08 17:52
Chrysene	ND		0.200	0.0210	µg/L	1	07/30/08 17:52
Dibenz[a,h]anthracene	ND		0.200	0.0120	µg/L	1	07/30/08 17:52
Fluoranthene	ND		0.200	0.0170	µg/L	1	07/30/08 17:52
Fluorene	ND		0.200	0.0160	µg/L	1	07/30/08 17:52
Indeno[1,2,3-cd]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 17:52
Naphthalene	ND		0.200	0.00980	µg/L	1	07/30/08 17:52
Phenanthrene	ND		0.200	0.0130	µg/L	1	07/30/08 17:52
Pyrene	ND		0.200	0.0160	µg/L	1	07/30/08 17:52
Surr: Terphenyl-d14	75.3		51-135	0	%REC	1	07/30/08 17:52

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:55 376542 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200

East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C

Work Order: 0807109

Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: 0807109-001AMS	SampType: MS	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: SWMU-102-0708	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376550
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df			

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	10.4	0.215	10.8	4.09	59	46	120				
Acenaphthene	16.7	0.215	10.8	6.82	92	47	120				
Acenaphthylene	9.92	0.215	10.8	0.121	91	50	120				
Anthracene	12.3	0.215	10.8	1.84	97	54	120				
Benzo[a]anthracene	11.2	0.215	10.8	1.48	90	56	100				
Benzo[a]pyrene	12.8	0.215	10.8	1.16	108	53	120				
Benzo[b]fluoranthene	15.3	0.215	10.8	2.08	123	45	124				
Benzo[g,h,i]perylene	6.95	0.215	10.8	0.511	60	38	123				
Benzo[k]fluoranthene	14.4	0.215	10.8	0.812	126	45	124				S
Chrysene	10.8	0.215	10.8	1.37	88	55	120				
Dibenz[a,h]anthracene	3.04	0.215	10.8	0.149	27	42	127				S
Fluoranthene	17.2	0.215	10.8	6.67	98	54	120				
Fluorene	16.9	0.215	10.8	6.07	101	50	120				
Indeno[1,2,3-cd]pyrene	6.89	0.215	10.8	0.448	60	43	125				
Naphthalene	10.1	0.215	10.8	3.11	65	39	120				
Phenanthrene	17.4	0.215	10.8	6.66	100	51	120				
Pyrene	15.6	0.215	10.8	4.53	103	49	128				
Surr: Terphenyl-d14	7.76	0	10.8	0	72	51	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807109
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: 0807109-001AMSD	SampType: MSD	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: SWMU-102-0708	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376551
Instrument: MS05_26	ColumnID: DB-5MS		ZB-5, 0.5 df		

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	10.4	0.215	10.8	4.09	58	46	120	10.4	0.1	20	
Acenaphthene	16.6	0.215	10.8	6.82	91	47	120	16.7	0.4	20	
Acenaphthylene	9.68	0.215	10.8	0.121	89	50	120	9.92	2.5	20	
Anthracene	12.8	0.215	10.8	1.84	102	54	120	12.3	4.1	20	
Benzo[a]anthracene	12.3	0.215	10.8	1.48	100	56	100	11.2	9.5	20	
Benzo[a]pyrene	13.0	0.215	10.8	1.16	110	53	120	12.8	1.6	20	
Benzo[b]fluoranthene	16.3	0.215	10.8	2.08	132	45	124	15.3	6.6	20	S
Benzo[g,h,i]perylene	7.40	0.215	10.8	0.511	64	38	123	6.95	6.3	20	
Benzo[k]fluoranthene	14.3	0.215	10.8	0.812	126	45	124	14.4	0.6	20	S
Chrysene	11.5	0.215	10.8	1.37	95	55	120	10.8	6.6	20	
Dibenz[a,h]anthracene	3.15	0.215	10.8	0.149	28	42	127	3.04	3.7	20	S
Fluoranthene	18.7	0.215	10.8	6.67	112	54	120	17.2	8.2	20	
Fluorene	16.9	0.215	10.8	6.07	101	50	120	16.9	0	20	
Indeno[1,2,3-cd]pyrene	7.25	0.215	10.8	0.448	63	43	125	6.89	5.0	20	
Naphthalene	10.2	0.215	10.8	3.11	66	39	120	10.1	1.1	20	
Phenanthrene	18.3	0.215	10.8	6.66	108	51	120	17.4	5.0	20	
Pyrene	16.6	0.215	10.8	4.53	113	49	128	15.6	6.5	20	
Surr: Terphenyl-d14	8.15	0	10.8	0	76	51	135	0		0	

Qualifiers:
- B Analyte detected in the associated Method Blank
- ND Not Detected at the Practical Quantitation Limit (PQL)
- U Not Detected at the MDC or RI.
- E Value exceeds the instrument calibration range
- R RPD exceeds accepted precision limit
- J Analyte detected below the PQL
- S Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807109
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCS-7858	SampType: LCS	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376539
Instrument: MS05_26	ColumnID: DB-5MS		ZB-5, 0.5 df		

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	3.70	0.200	10	0	37	46	120				S
Acenaphthene	6.52	0.200	10	0	65	47	120				
Acenaphthylene	6.69	0.200	10	0	67	50	120				
Anthracene	9.96	0.200	10	0	100	54	120				
Benzo[a]anthracene	9.59	0.200	10	0	96	56	100				
Benzo[a]pyrene	11.2	0.200	10	0	112	53	120				
Benzo[b]fluoranthene	11.4	0.200	10	0	114	45	124				
Benzo[g,h,i]perylene	11.0	0.200	10	0	110	38	123				
Benzo[k]fluoranthene	12.3	0.200	10	0	123	45	124				
Chrysene	9.28	0.200	10	0	93	55	120				
Dibenz[a,h]anthracene	3.99	0.200	10	0	40	42	127				S
Fluoranthene	10.6	0.200	10	0	106	54	120				
Fluorene	8.97	0.200	10	0	90	50	120				
Indeno[1,2,3-cd]pyrene	9.57	0.200	10	0	96	43	125				
Naphthalene	4.91	0.200	10	0	49	39	120				
Phenanthrene	9.76	0.200	10	0	98	51	120				
Pyrene	10.6	0.200	10	0	106	49	128				
Surr: Terphenyl-d14	8.15	0	10	0	81	51	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807109
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCSD-7858	SampType: LCSD	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376540
Instrument: MS05_26	ColumnID: DB-5MS		ZB-5, 0.5 df		

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	2.44	0.200	10	0	24	46	120	3.7	41	20	RS
Acenaphthene	5.61	0.200	10	0	56	47	120	6.52	15	20	
Acenaphthylene	5.67	0.200	10	0	57	50	120	6.69	17	20	
Anthracene	8.76	0.200	10	0	88	54	120	9.96	13	20	
Benzo[a]anthracene	8.39	0.200	10	0	84	56	100	9.59	13	20	
Benzo[a]pyrene	10.1	0.200	10	0	101	53	120	11.2	9.9	20	
Benzo[b]fluoranthene	10.1	0.200	10	0	101	45	124	11.4	12	20	
Benzo[g,h,i]perylene	11.3	0.200	10	0	113	38	123	11	2.7	20	
Benzo[k]fluoranthene	10.7	0.200	10	0	107	45	124	12.3	14	20	
Chrysene	8.38	0.200	10	0	84	55	120	9.28	10	20	
Dibenz[a,h]anthracene	3.98	0.200	10	0	40	42	127	3.99	0.2	20	S
Fluoranthene	9.22	0.200	10	0	92	54	120	10.6	14	20	
Fluorene	8.04	0.200	10	0	80	50	120	8.97	11	20	
Indeno[1,2,3-cd]pyrene	9.56	0.200	10	0	96	43	125	9.57	0.2	20	
Naphthalene	2.66	0.200	10	0	27	39	120	4.91	59	20	RS
Phenanthrene	8.71	0.200	10	0	87	51	120	9.76	11	20	
Pyrene	9.16	0.200	10	0	92	49	128	10.6	14	20	
Surr: Terphenyl-d14	7.46	0	10	0	75	51	135	0		0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit
U	Not Detected at the MDC or RL		

J	Analyte detected below the PQL
S	Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807109
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: MB-7858	SampType: MBLK	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356	
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376538	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df				

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	ND	0.200									
Acenaphthene	ND	0.200									
Acenaphthylene	ND	0.200									
Anthracene	ND	0.200									
Benzo[a]anthracene	ND	0.200									
Benzo[a]pyrene	ND	0.200									
Benzo[b]fluoranthene	ND	0.200									
Benzo[g,h,i]perylene	ND	0.200									
Benzo[k]fluoranthene	ND	0.200									
Chrysene	ND	0.200									
Dibenz[a,h]anthracene	ND	0.200									
Fluoranthene	ND	0.200									
Fluorene	ND	0.200									
Indeno[1,2,3-cd]pyrene	ND	0.200									
Naphthalene	ND	0.200									
Phenanthrene	ND	0.200									
Pyrene	ND	0.200									
Surr: Terphenyl-d14	8.28	0	10	0	83	51	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Thursday, August 14, 2008

Ms. Tina Bickerstaff
O'Brien & Gere Engineers, Inc
8401 Corporate Dr.
Suite 400
Landover, MD 20785

TEL: 301-731-5622

Project: BAE NORTHFOLK SHIP REPAIR
RE: Analytical Results Order No.: 0807110

Dear Ms. Tina Bickerstaff:

Life Science Laboratories, Inc. received 10 sample(s) on 7/24/2008 for the analyses presented in the following report.

Very truly yours,
Life Science Laboratories, Inc.

Anthony Crescenzi
Project Manager

CC:
Mr. Conrad Lawrence; O'Brien & Gere Engineers, Inc

Life Science Laboratories, Inc.
Brittonfield Lab

5000 Brittonfield Parkway, Suite 200
East Syracuse, New York 13057
(315) 437-0200

Chain of Custody

Client: O'Brien & Gere Engineers

Project: BAE/NSR - EWBE Followup SB119.100.001

Sampled by: Conrad Lawrence, Tim Bickerstaff

Client Contact: Tim Bickerstaff Phone # 443/223-9368

Sample Description

Sample Location	Date Collected	Time Collected	Sample Matrix	Comp. or Grab	No. of Containers	Analysis/Method: PAHs 8270 SIM							Comments
SB-111-01-SL01	7/22/08	1145	SL	G	1	1							Fuel Oil
SB-111-02-SL01		1201	SL	G	1	1							Fuel Oil
SB-114-01-SL01		1045	SL	G	1	1							
SB-114-02-SL01		1120	SL	G	1	1							
SB-105-01-SL01		0922	SL	G	1	1							
SB-105-02-SL01		0943	SL	G	1	1							
SB-111-51-SL01		1145	SL	G	1	1							Fuel Oil
SB-111-02-MS-SL01		1201	SL	G	1	1							Fuel Oil
SB-111-02-MSD-SL01		1201	SL	G	1	1							Fuel Oil
SB-111-03-SL01		1220	SL	G	1	1							Fuel Oil
SB-111-04-SL01		1244	SL	G	1	1							Fuel Oil
SLEB-01-07708	7/22/08	1000	W	G	2	2							

Relinquished by: Conrad Lawrence	Date: 7/23/08	Time: 1816	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Lab:
Shipment Method:			Airbill Number:

Date: Time:
Date: Time:
Date: 7/24/08 Time: 1250

Turnaround Time Required:
Routine X
Rush (Specify)

Comments: cc: results to Conrad Lawrence

Cooler Temperature: 1.6°C Daisy

Original - Laboratory
Copy - Client

Grant Matthews
OBRIEN & GERE
4435 Waterfront Drive

GLEN ALLEN, VA 230603331

FedEx Express

ActWgt: 40 LB Dims: 24 X 24 X 36 IN
System#: 819269 I/INET8061
Account#: S *********

Delivery Address Bar Code

Ref # 38119.100.001
Invoice #
PO #
Dept #

SHIP TO: 3154370200 BILL SENDER

Tony Crescenzi/Sample receiving
Life Science Labs Inc-Brittonfield
5000 Brittonfield Parkway
Suite 200
East Syracuse, NY 13057

THU - 24JUL A1
STANDARD OVERNIGHT

TRK# 0201 7998 8595 2203

13057
NY-US
SYR

XH SYRA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.

Life Science Laboratories, Inc.

Sample Receipt Checklist

Client Name: **OBG-LANDOVER** Date and Time Received: **7/24/2008 12:00:00 PM**

Work Order Number **0807110** Received by: kac

Checklist completed by: YL 7/24/08 Reviewed by: CL 7/24/08
Initials Date Initials Date

Matrix: Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Comments:

Corrective Action::

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807110-001A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SB-111-01-SL01***
W Order:	0807110	**Collection Date:**	07/22/08 11:45
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 14.8	**BatchNo:** 7862/R14368
Revision:	08/01/08 7:55	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9685.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	1400		82	3.9	µg/Kg-dry	10	07/31/08 11:53
Acenaphthene	ND		82	5.3	µg/Kg-dry	10	07/31/08 11:53
Acenaphthylene	ND		82	2.3	µg/Kg-dry	10	07/31/08 11:53
Anthracene	520		82	7.7	µg/Kg-dry	10	07/31/08 11:53
Benzo[a]anthracene	230		82	3.5	µg/Kg-dry	10	07/31/08 11:53
Benzo[a]pyrene	240		82	3.8	µg/Kg-dry	10	07/31/08 11:53
Benzo[b]fluoranthene	ND		82	3.8	µg/Kg-dry	10	07/31/08 11:53
Benzo[g,h,i]perylene	150		82	3.9	µg/Kg-dry	10	07/31/08 11:53
Benzo[k]fluoranthene	ND		82	7.3	µg/Kg-dry	10	07/31/08 11:53
Chrysene	430		82	4.5	µg/Kg-dry	10	07/31/08 11:53
Dibenz[a,h]anthracene	ND		82	3.4	µg/Kg-dry	10	07/31/08 11:53
Fluoranthene	260		82	3.5	µg/Kg-dry	10	07/31/08 11:53
Fluorene	630		82	4.7	µg/Kg-dry	10	07/31/08 11:53
Indeno[1,2,3-cd]pyrene	43	J	82	2.8	µg/Kg-dry	10	07/31/08 11:53
Naphthalene	ND		82	3.2	µg/Kg-dry	10	07/31/08 11:53
Phenanthrene	1700		82	3.1	µg/Kg-dry	10	07/31/08 11:53
Pyrene	1700		82	4.7	µg/Kg-dry	10	07/31/08 11:53
Surr: Terphenyl-d14	88.8		14-129	0	%REC	10	07/31/08 11:53

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376975 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807110-002A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SB-111-02-SL01***
W Order:	0807110	**Collection Date:**	07/22/08 12:01
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 16.1	**BatchNo:** 7862/R14368
Revision:	08/01/08 7:55	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9686.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	280		42	2.0	µg/Kg-dry	5	07/31/08 12:23
Acenaphthene	ND		42	2.7	µg/Kg-dry	5	07/31/08 12:23
Acenaphthylene	ND		42	1.2	µg/Kg-dry	5	07/31/08 12:23
Anthracene	210		42	3.9	µg/Kg-dry	5	07/31/08 12:23
Benzo[a]anthracene	120		42	1.8	µg/Kg-dry	5	07/31/08 12:23
Benzo[a]pyrene	120		42	1.9	µg/Kg-dry	5	07/31/08 12:23
Benzo[b]fluoranthene	ND		42	1.9	µg/Kg-dry	5	07/31/08 12:23
Benzo[g,h,i]perylene	73		42	2.0	µg/Kg-dry	5	07/31/08 12:23
Benzo[k]fluoranthene	ND		42	3.7	µg/Kg-dry	5	07/31/08 12:23
Chrysene	210		42	2.3	µg/Kg-dry	5	07/31/08 12:23
Dibenz[a,h]anthracene	ND		42	1.7	µg/Kg-dry	5	07/31/08 12:23
Fluoranthene	120		42	1.8	µg/Kg-dry	5	07/31/08 12:23
Fluorene	130		42	2.4	µg/Kg-dry	5	07/31/08 12:23
Indeno[1,2,3-cd]pyrene	23	J	42	1.4	µg/Kg-dry	5	07/31/08 12:23
Naphthalene	ND		42	1.6	µg/Kg-dry	5	07/31/08 12:23
Phenanthrene	850		42	1.5	µg/Kg-dry	5	07/31/08 12:23
Pyrene	810		42	2.4	µg/Kg-dry	5	07/31/08 12:23
Surr: Terphenyl-d14	91.4		14-129	0	%REC	5	07/31/08 12:23

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376976 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
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Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807110-003A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*SB-114-01-SL01*
W Order:	0807110	**Collection Date:**	07/22/08 10:45
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 14.5	**BatchNo:** 7862/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9670.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	0.58	J	8.2	0.39	µg/Kg-dry	1	07/30/08 20:51
Acenaphthene	ND		8.2	0.53	µg/Kg-dry	1	07/30/08 20:51
Acenaphthylene	0.68	J	8.2	0.23	µg/Kg-dry	1	07/30/08 20:51
Anthracene	ND		8.2	0.77	µg/Kg-dry	1	07/30/08 20:51
Benzo[a]anthracene	2.4	J	8.2	0.35	µg/Kg-dry	1	07/30/08 20:51
Benzo[a]pyrene	4.3	J	8.2	0.37	µg/Kg-dry	1	07/30/08 20:51
Benzo[b]fluoranthene	7.2	J	8.2	0.37	µg/Kg-dry	1	07/30/08 20:51
Benzo[g,h,i]perylene	4.4	J	8.2	0.39	µg/Kg-dry	1	07/30/08 20:51
Benzo[k]fluoranthene	2.4	J	8.2	0.73	µg/Kg-dry	1	07/30/08 20:51
Chrysene	3.9	J	8.2	0.44	µg/Kg-dry	1	07/30/08 20:51
Dibenz[a,h]anthracene	1.1	J	8.2	0.34	µg/Kg-dry	1	07/30/08 20:51
Fluoranthene	4.1	J	8.2	0.35	µg/Kg-dry	1	07/30/08 20:51
Fluorene	ND		8.2	0.47	µg/Kg-dry	1	07/30/08 20:51
Indeno[1,2,3-cd]pyrene	3.2	J	8.2	0.28	µg/Kg-dry	1	07/30/08 20:51
Naphthalene	0.48	J	8.2	0.32	µg/Kg-dry	1	07/30/08 20:51
Phenanthrene	2.8	J	8.2	0.30	µg/Kg-dry	1	07/30/08 20:51
Pyrene	4.9	J	8.2	0.47	µg/Kg-dry	1	07/30/08 20:51
Surr: Terphenyl-d14	75.6		14-129	0	%REC	1	07/30/08 20:51

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376548 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
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Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807110-004A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SB-114-02-SL01***
W Order:	0807110	**Collection Date:**	07/22/08 11:20
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 12.6	**BatchNo:** 7862/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9667.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	0.75	J	8.0	0.38	µg/Kg-dry	1	07/30/08 19:22
Acenaphthene	ND		8.0	0.51	µg/Kg-dry	1	07/30/08 19:22
Acenaphthylene	1.1	J	8.0	0.23	µg/Kg-dry	1	07/30/08 19:22
Anthracene	2.1	J	8.0	0.76	µg/Kg-dry	1	07/30/08 19:22
Benzo[a]anthracene	6.0	J	8.0	0.34	µg/Kg-dry	1	07/30/08 19:22
Benzo[a]pyrene	9.7		8.0	0.37	µg/Kg-dry	1	07/30/08 19:22
Benzo[b]fluoranthene	13		8.0	0.37	µg/Kg-dry	1	07/30/08 19:22
Benzo[g,h,i]perylene	7.4	J	8.0	0.38	µg/Kg-dry	1	07/30/08 19:22
Benzo[k]fluoranthene	4.6	J	8.0	0.71	µg/Kg-dry	1	07/30/08 19:22
Chrysene	7.3	J	8.0	0.43	µg/Kg-dry	1	07/30/08 19:22
Dibenz[a,h]anthracene	2.2	J	8.0	0.33	µg/Kg-dry	1	07/30/08 19:22
Fluoranthene	7.4	J	8.0	0.34	µg/Kg-dry	1	07/30/08 19:22
Fluorene	ND		8.0	0.46	µg/Kg-dry	1	07/30/08 19:22
Indeno[1,2,3-cd]pyrene	6.1	J	8.0	0.27	µg/Kg-dry	1	07/30/08 19:22
Naphthalene	2.7	J	8.0	0.31	µg/Kg-dry	1	07/30/08 19:22
Phenanthrene	2.1	J	8.0	0.30	µg/Kg-dry	1	07/30/08 19:22
Pyrene	9.2		8.0	0.46	µg/Kg-dry	1	07/30/08 19:22
Surr: Terphenyl-d14	72.8		14-129	0	%REC	1	07/30/08 19:22

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376545 **Project Supervisor:** Anthony Crescenzi

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Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	**0807110-005A**
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	***SB-105-01-SL01***
W Order:	0807110	**Collection Date:**	07/22/08 9:22
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 17.1	**BatchNo:** 7862/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9665.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	ND		8.4	0.40	µg/Kg-dry	1	07/30/08 18:22
Acenaphthene	ND		8.4	0.54	µg/Kg-dry	1	07/30/08 18:22
Acenaphthylene	ND		8.4	0.24	µg/Kg-dry	1	07/30/08 18:22
Anthracene	ND		8.4	0.80	µg/Kg-dry	1	07/30/08 18:22
Benzo[a]anthracene	ND		8.4	0.36	µg/Kg-dry	1	07/30/08 18:22
Benzo[a]pyrene	ND		8.4	0.39	µg/Kg-dry	1	07/30/08 18:22
Benzo[b]fluoranthene	ND		8.4	0.39	µg/Kg-dry	1	07/30/08 18:22
Benzo[g,h,i]perylene	ND		8.4	0.40	µg/Kg-dry	1	07/30/08 18:22
Benzo[k]fluoranthene	ND		8.4	0.75	µg/Kg-dry	1	07/30/08 18:22
Chrysene	ND		8.4	0.46	µg/Kg-dry	1	07/30/08 18:22
Dibenz[a,h]anthracene	ND		8.4	0.35	µg/Kg-dry	1	07/30/08 18:22
Fluoranthene	ND		8.4	0.36	µg/Kg-dry	1	07/30/08 18:22
Fluorene	ND		8.4	0.48	µg/Kg-dry	1	07/30/08 18:22
Indeno[1,2,3-cd]pyrene	ND		8.4	0.29	µg/Kg-dry	1	07/30/08 18:22
Naphthalene	ND		8.4	0.33	µg/Kg-dry	1	07/30/08 18:22
Phenanthrene	ND		8.4	0.31	µg/Kg-dry	1	07/30/08 18:22
Pyrene	ND		8.4	0.48	µg/Kg-dry	1	07/30/08 18:22
Surr: Terphenyl-d14	77.5		14-129	0	%REC	1	07/30/08 18:22

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376543 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
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Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807110-006A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*SB-105-02-SL01*
W Order:	0807110	**Collection Date:**	07/22/08 9:43
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 16.4	**BatchNo:** 7862/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9668.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	2.5 J		8.4	0.39	µg/Kg-dry	1	07/30/08 19:52
Acenaphthene	2.7 J		8.4	0.54	µg/Kg-dry	1	07/30/08 19:52
Acenaphthylene	3.3 J		8.4	0.24	µg/Kg-dry	1	07/30/08 19:52
Anthracene	12		8.4	0.79	µg/Kg-dry	1	07/30/08 19:52
Benzo[a]anthracene	20		8.4	0.36	µg/Kg-dry	1	07/30/08 19:52
Benzo[a]pyrene	20		8.4	0.38	µg/Kg-dry	1	07/30/08 19:52
Benzo[b]fluoranthene	24		8.4	0.38	µg/Kg-dry	1	07/30/08 19:52
Benzo[g,h,i]perylene	12		8.4	0.39	µg/Kg-dry	1	07/30/08 19:52
Benzo[k]fluoranthene	12		8.4	0.74	µg/Kg-dry	1	07/30/08 19:52
Chrysene	18		8.4	0.45	µg/Kg-dry	1	07/30/08 19:52
Dibenz[a,h]anthracene	3.1 J		8.4	0.35	µg/Kg-dry	1	07/30/08 19:52
Fluoranthene	62		8.4	0.36	µg/Kg-dry	1	07/30/08 19:52
Fluorene	10		8.4	0.48	µg/Kg-dry	1	07/30/08 19:52
Indeno[1,2,3-cd]pyrene	10		8.4	0.29	µg/Kg-dry	1	07/30/08 19:52
Naphthalene	4.5 J		8.4	0.32	µg/Kg-dry	1	07/30/08 19:52
Phenanthrene	76		8.4	0.31	µg/Kg-dry	1	07/30/08 19:52
Pyrene	49		8.4	0.48	µg/Kg-dry	1	07/30/08 19:52
Surr: Terphenyl-d14	70.7		14-129	0	%REC	1	07/30/08 19:52

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376546 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
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Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807110-007A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*SB-111-51-SL01*
W Order:	0807110	**Collection Date:**	07/22/08 11:45
Matrix:	SOIL	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 30 g	**PrepDate:** 07/28/08 17:35
ColumnID:	DB-5MS	**%Moisture:** 16.9	**BatchNo:** 7862/R14368
Revision:	08/01/08 7:55	**TestCode:** 8270S SIMP	**FileID:** 1-SAMP-N9684.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	570		42	2.0	µg/Kg-dry	5	07/31/08 11:23
Acenaphthene	ND		42	2.7	µg/Kg-dry	5	07/31/08 11:23
Acenaphthylene	ND		42	1.2	µg/Kg-dry	5	07/31/08 11:23
Anthracene	190		42	4.0	µg/Kg-dry	5	07/31/08 11:23
Benzo[a]anthracene	98		42	1.8	µg/Kg-dry	5	07/31/08 11:23
Benzo[a]pyrene	89		42	1.9	µg/Kg-dry	5	07/31/08 11:23
Benzo[b]fluoranthene	ND		42	1.9	µg/Kg-dry	5	07/31/08 11:23
Benzo[g,h,i]perylene	59		42	2.0	µg/Kg-dry	5	07/31/08 11:23
Benzo[k]fluoranthene	ND		42	3.7	µg/Kg-dry	5	07/31/08 11:23
Chrysene	170		42	2.3	µg/Kg-dry	5	07/31/08 11:23
Dibenz[a,h]anthracene	ND		42	1.7	µg/Kg-dry	5	07/31/08 11:23
Fluoranthene	98		42	1.8	µg/Kg-dry	5	07/31/08 11:23
Fluorene	230		42	2.4	µg/Kg-dry	5	07/31/08 11:23
Indeno[1,2,3-cd]pyrene	15	J	42	1.4	µg/Kg-dry	5	07/31/08 11:23
Naphthalene	ND		42	1.6	µg/Kg-dry	5	07/31/08 11:23
Phenanthrene	740		42	1.6	µg/Kg-dry	5	07/31/08 11:23
Pyrene	670		42	2.4	µg/Kg-dry	5	07/31/08 11:23
Surr: Terphenyl-d14	87.5		14-129	0	%REC	5	07/31/08 11:23

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376974 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
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Analytical Results

StateCertNo: 00244

CLIENT: O'Brien & Gere Engineers, Inc
Project: BAE Northfolk Ship Repair
W Order: 0807110
Matrix: SOIL
Inst. ID: MS05 26 **Sample Size:** 30 g
ColumnID: DB-5MS **%Moisture:** 20.8
Revision: 08/01/08 7:55 **TestCode:** 8270S SIMP
Col Type:

Lab ID: 0807110-008A
Client Sample ID: *SB-111-03-SL01*
Collection Date: 07/22/08 12:20
Date Received: 07/24/08 12:00
PrepDate: 07/28/08 17:35
BatchNo: 7862/R14368
FileID: 1-SAMP-N9689.D

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					**SW8270C**		**(SW3550B)**
2-Methylnaphthalene	86		44	2.1	µg/Kg-dry	5	07/31/08 13:52
Acenaphthene	ND		44	2.8	µg/Kg-dry	5	07/31/08 13:52
Acenaphthylene	ND		44	1.3	µg/Kg-dry	5	07/31/08 13:52
Anthracene	82		44	4.2	µg/Kg-dry	5	07/31/08 13:52
Benzo[a]anthracene	33	J	44	1.9	µg/Kg-dry	5	07/31/08 13:52
Benzo[a]pyrene	30	J	44	2.0	µg/Kg-dry	5	07/31/08 13:52
Benzo[b]fluoranthene	ND		44	2.0	µg/Kg-dry	5	07/31/08 13:52
Benzo[g,h,i]perylene	ND		44	2.1	µg/Kg-dry	5	07/31/08 13:52
Benzo[k]fluoranthene	ND		44	3.9	µg/Kg-dry	5	07/31/08 13:52
Chrysene	59		44	2.4	µg/Kg-dry	5	07/31/08 13:52
Dibenz[a,h]anthracene	ND		44	1.8	µg/Kg-dry	5	07/31/08 13:52
Fluoranthene	ND		44	1.9	µg/Kg-dry	5	07/31/08 13:52
Fluorene	150		44	2.5	µg/Kg-dry	5	07/31/08 13:52
Indeno[1,2,3-cd]pyrene	ND		44	1.5	µg/Kg-dry	5	07/31/08 13:52
Naphthalene	ND		44	1.7	µg/Kg-dry	5	07/31/08 13:52
Phenanthrene	160		44	1.6	µg/Kg-dry	5	07/31/08 13:52
Pyrene	250		44	2.5	µg/Kg-dry	5	07/31/08 13:52
Surr: Terphenyl-d14	89.1		14-129	0	%REC	5	07/31/08 13:52

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376979 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
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Analytical Results

StateCertNo: 00244

CLIENT: O'Brien & Gere Engineers, Inc
Project: BAE Northfolk Ship Repair
W Order: 0807110
Matrix: SOIL
Inst. ID: MS05 26 **Sample Size:** 30 g
ColumnID: DB-5MS **%Moisture:** 17.2
Revision: 08/01/08 7:55 **TestCode:** 8270S SIMP
Col Type:

Lab ID: 0807110-009A
Client Sample ID: *SB-111-04-SL01*
Collection Date: 07/22/08 12:44
Date Received: 07/24/08 12:00
PrepDate: 07/28/08 17:35
BatchNo: 7862/R14368
FileID: 1-SAMP-N9690.D

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS					SW8270C		(SW3550B)
2-Methylnaphthalene	44		42	2.0	µg/Kg-dry	5	07/31/08 14:22
Acenaphthene	ND		42	2.7	µg/Kg-dry	5	07/31/08 14:22
Acenaphthylene	ND		42	1.2	µg/Kg-dry	5	07/31/08 14:22
Anthracene	110		42	4.0	µg/Kg-dry	5	07/31/08 14:22
Benzo[a]anthracene	50		42	1.8	µg/Kg-dry	5	07/31/08 14:22
Benzo[a]pyrene	43		42	1.9	µg/Kg-dry	5	07/31/08 14:22
Benzo[b]fluoranthene	ND		42	1.9	µg/Kg-dry	5	07/31/08 14:22
Benzo[g,h,i]perylene	29	J	42	2.0	µg/Kg-dry	5	07/31/08 14:22
Benzo[k]fluoranthene	ND		42	3.7	µg/Kg-dry	5	07/31/08 14:22
Chrysene	87		42	2.3	µg/Kg-dry	5	07/31/08 14:22
Dibenz[a,h]anthracene	ND		42	1.8	µg/Kg-dry	5	07/31/08 14:22
Fluoranthene	51		42	1.8	µg/Kg-dry	5	07/31/08 14:22
Fluorene	140		42	2.4	µg/Kg-dry	5	07/31/08 14:22
Indeno[1,2,3-cd]pyrene	ND		42	1.4	µg/Kg-dry	5	07/31/08 14:22
Naphthalene	ND		42	1.6	µg/Kg-dry	5	07/31/08 14:22
Phenanthrene	190		42	1.6	µg/Kg-dry	5	07/31/08 14:22
Pyrene	400		42	2.4	µg/Kg-dry	5	07/31/08 14:22
Surr: Terphenyl-d14	85.1		14-129	0	%REC	5	07/31/08 14:22

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376980 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807110-010A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*SLEB-01-0708*
W Order:	0807110	**Collection Date:**	07/22/08 10:00
Matrix:	WATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 1000 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9666.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	ND		0.200	0.0140	µg/L	1	07/30/08 18:52
Acenaphthene	ND		0.200	0.0140	µg/L	1	07/30/08 18:52
Acenaphthylene	ND		0.200	0.0110	µg/L	1	07/30/08 18:52
Anthracene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Benzo[a]anthracene	ND		0.200	0.0150	µg/L	1	07/30/08 18:52
Benzo[a]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Benzo[b]fluoranthene	ND		0.200	0.0150	µg/L	1	07/30/08 18:52
Benzo[g,h,i]perylene	ND		0.200	0.00940	µg/L	1	07/30/08 18:52
Benzo[k]fluoranthene	ND		0.200	0.0180	µg/L	1	07/30/08 18:52
Chrysene	ND		0.200	0.0210	µg/L	1	07/30/08 18:52
Dibenz[a,h]anthracene	ND		0.200	0.0120	µg/L	1	07/30/08 18:52
Fluoranthene	ND		0.200	0.0170	µg/L	1	07/30/08 18:52
Fluorene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Indeno[1,2,3-cd]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Naphthalene	ND		0.200	0.00980	µg/L	1	07/30/08 18:52
Phenanthrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Pyrene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Surr: Terphenyl-d14	80.6		51-135	0	%REC	1	07/30/08 18:52

Qualifiers:	* Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
	J Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
	P Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376544 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.
5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

Analytical Results

StateCertNo: 00244

CLIENT:	O'Brien & Gere Engineers, Inc	**Lab ID:**	0807110-010A
Project:	BAE Northfolk Ship Repair	**Client Sample ID:**	*SLEB-01-0708*
W Order:	0807110	**Collection Date:**	07/22/08 10:00
Matrix:	WATER	**Date Received:**	07/24/08 12:00
Inst. ID:	MS05 26	**Sample Size:** 1000 mL	**PrepDate:** 07/28/08 10:23
ColumnID:	DB-5MS	**%Moisture:**	**BatchNo:** 7858/R14356
Revision:	07/31/08 9:17	**TestCode:** 8270W SIMP	**FileID:** 1-SAMP-N9666.D
Col Type:			

Analyte	Result	Qual	PQL	MDL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS - SIM					**SW8270C**		**(SW3520C)**
2-Methylnaphthalene	ND		0.200	0.0140	µg/L	1	07/30/08 18:52
Acenaphthene	ND		0.200	0.0140	µg/L	1	07/30/08 18:52
Acenaphthylene	ND		0.200	0.0110	µg/L	1	07/30/08 18:52
Anthracene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Benzo[a]anthracene	ND		0.200	0.0150	µg/L	1	07/30/08 18:52
Benzo[a]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Benzo[b]fluoranthene	ND		0.200	0.0150	µg/L	1	07/30/08 18:52
Benzo[g,h,i]perylene	ND		0.200	0.00940	µg/L	1	07/30/08 18:52
Benzo[k]fluoranthene	ND		0.200	0.0180	µg/L	1	07/30/08 18:52
Chrysene	ND		0.200	0.0210	µg/L	1	07/30/08 18:52
Dibenz[a,h]anthracene	ND		0.200	0.0120	µg/L	1	07/30/08 18:52
Fluoranthene	ND		0.200	0.0170	µg/L	1	07/30/08 18:52
Fluorene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Indeno[1,2,3-cd]pyrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Naphthalene	ND		0.200	0.00980	µg/L	1	07/30/08 18:52
Phenanthrene	ND		0.200	0.0130	µg/L	1	07/30/08 18:52
Pyrene	ND		0.200	0.0160	µg/L	1	07/30/08 18:52
Surr: Terphenyl-d14	80.6		51-135	0	%REC	1	07/30/08 18:52

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value exceeds the instrument calibration range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the PQL	ND	Not Detected at the Practical Quantitation Limit (PQL)
P	Prim./Conf. column %D or RPD exceeds limit	S	Spike Recovery outside accepted recovery limits

Print Date: 08/01/08 7:56 376544 **Project Supervisor:** Anthony Crescenzi

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: 0807110-002AMS	SampType: MS	TestCode: 8270S_SIMP	Units: µg/Kg-dry	Prep Date: 7/28/2008	RunNo: 14368	
Client ID: SB-111-02-SL01	Batch ID: 7862	Method: SW8270C	(SW3550B)	Analysis Date: 7/31/2008	SeqNo: 376977	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df				

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	470	42	397	284	47	30	111				S
Acenaphthene	447	42	397	0	113	28	110				
Acenaphthylene	407	42	397	0	103	23	126				
Anthracene	520	42	397	211	78	28	136				
Benzo[a]anthracene	402	42	397	122	70	31	146				
Benzo[a]pyrene	482	42	397	115	92	28	128				
Benzo[b]fluoranthene	529	42	397	0	133	30	139				
Benzo[g,h,i]perylene	277	42	397	72.8	51	21	149				
Benzo[k]fluoranthene	524	42	397	0	132	42	129				S
Chrysene	422	42	397	208	54	39	134				
Dibenz[a,h]anthracene	277	42	397	0	70	30	138				
Fluoranthene	469	42	397	123	87	30	142				
Fluorene	470	42	397	127	87	27	116				
Indeno[1,2,3-cd]pyrene	284	42	397	23.1	66	17	164				
Naphthalene	358	42	397	0	90	29	106				
Phenanthrene	801	42	397	850	0	32	127				S
Pyrene	822	42	397	810	3	28	130				S
Surr: Terphenyl-d14	344	0	397	0	87	14	129				

Qualifiers:
- B Analyte detected in the associated Method Blank
- ND Not Detected at the Practical Quantitation Limit (PQL)
- U Not Detected at the MDC or RL
- E Value exceeds the instrument calibration range
- R RPD exceeds accepted precision limit
- J Analyte detected below the PQL
- S Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
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ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: 0807110-002AMSD	SampType: MSD	TestCode: 8270S_SIMP	Units: µg/Kg-dry	Prep Date: 7/28/2008	RunNo: 14368	
Client ID: SB-111-02-SL01	Batch ID: 7862	Method: SW8270C	(SW3550B)	Analysis Date: 7/31/2008	SeqNo: 376978	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df				

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	533	42	397	284	63	30	111	470	13	50	
Acenaphthene	469	42	397	0	118	28	110	447	4.7	50	S
Acenaphthylene	407	42	397	0	102	23	126	407	0.1	50	
Anthracene	578	42	397	211	92	28	136	520	10	50	
Benzo[a]anthracene	424	42	397	122	76	31	146	402	5.4	50	
Benzo[a]pyrene	501	42	397	115	97	28	128	482	3.9	50	
Benzo[b]fluoranthene	584	42	397	0	147	30	139	529	9.8	50	S
Benzo[g,h,i]perylene	259	42	397	72.8	47	21	149	277	6.9	50	
Benzo[k]fluoranthene	484	42	397	0	122	42	129	524	8.0	50	
Chrysene	444	42	397	208	59	39	134	422	4.9	50	
Dibenz[a,h]anthracene	263	42	397	0	66	30	138	277	5.3	50	
Fluoranthene	497	42	397	123	94	30	142	469	5.8	50	
Fluorene	518	42	397	127	99	27	116	470	9.7	50	
Indeno[1,2,3-cd]pyrene	252	42	397	23.1	58	17	164	284	12	50	
Naphthalene	362	42	397	0	91	29	106	358	1.2	50	
Phenanthrene	1020	42	397	850	42	32	127	801	24	50	
Pyrene	1010	42	397	810	49	28	130	822	20	50	
Surr: Terphenyl-d14	346	0	397	0	87	14	129	0		0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit
U	Not Detected at the MDC or RL	J	Analyte detected below the PQL
		S	Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
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ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCS-7858	SampType: LCS	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356	
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376539	
Instrument: MS05_26	ColumnID: DB-5MS		ZB-5, 0.5 df			

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	3.70	0.200	10	0	37	46	120				S
Acenaphthene	6.52	0.200	10	0	65	47	120				
Acenaphthylene	6.69	0.200	10	0	67	50	120				
Anthracene	9.96	0.200	10	0	100	54	120				
Benzo[a]anthracene	9.59	0.200	10	0	96	56	100				
Benzo[a]pyrene	11.2	0.200	10	0	112	53	120				
Benzo[b]fluoranthene	11.4	0.200	10	0	114	45	124				
Benzo[g,h,i]perylene	11.0	0.200	10	0	110	38	123				
Benzo[k]fluoranthene	12.3	0.200	10	0	123	45	124				
Chrysene	9.28	0.200	10	0	93	55	120				
Dibenz[a,h]anthracene	3.99	0.200	10	0	40	42	127				S
Fluoranthene	10.6	0.200	10	0	106	54	120				
Fluorene	8.97	0.200	10	0	90	50	120				
Indeno[1,2,3-cd]pyrene	9.57	0.200	10	0	96	43	125				
Naphthalene	4.91	0.200	10	0	49	39	120				
Phenanthrene	9.76	0.200	10	0	98	51	120				
Pyrene	10.6	0.200	10	0	106	49	128				
Surr: Terphenyl-d14	8.15	0	10	0	81	51	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit
U	Not Detected at the MDC or RL		

J	Analyte detected below the PQL	
S	Spike Recovery outside accepted recovery limits	

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
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ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCSD-7858	SampType: LCSD	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376540
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df			

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	2.44	0.200	10	0	24	46	120	3.7	41	20	RS
Acenaphthene	5.61	0.200	10	0	56	47	120	6.52	15	20	
Acenaphthylene	5.67	0.200	10	0	57	50	120	6.69	17	20	
Anthracene	8.76	0.200	10	0	88	54	120	9.96	13	20	
Benzo[a]anthracene	8.39	0.200	10	0	84	56	100	9.59	13	20	
Benzo[a]pyrene	10.1	0.200	10	0	101	53	120	11.2	9.9	20	
Benzo[b]fluoranthene	10.1	0.200	10	0	101	45	124	11.4	12	20	
Benzo[g,h,i]perylene	11.3	0.200	10	0	113	38	123	11	2.7	20	
Benzo[k]fluoranthene	10.7	0.200	10	0	107	45	124	12.3	14	20	
Chrysene	8.38	0.200	10	0	84	55	120	9.28	10	20	
Dibenz[a,h]anthracene	3.98	0.200	10	0	40	42	127	3.99	0.2	20	S
Fluoranthene	9.22	0.200	10	0	92	54	120	10.6	14	20	
Fluorene	8.04	0.200	10	0	80	50	120	8.97	11	20	
Indeno[1,2,3-cd]pyrene	9.56	0.200	10	0	96	43	125	9.57	0.2	20	
Naphthalene	2.66	0.200	10	0	27	39	120	4.91	59	20	RS
Phenanthrene	8.71	0.200	10	0	87	51	120	9.76	11	20	
Pyrene	9.16	0.200	10	0	92	49	128	10.6	14	20	
Surr: Terphenyl-d14	7.46	0	10	0	75	51	135	0		0	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Practical Quantitation Limit (PQL)
- U Not Detected at the MDC or RL
- E Value exceeds the instrument calibration range
- R RPD exceeds accepted precision limit
- J Analyte detected below the PQL
- S Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
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ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCS-7862	SampType: LCS	TestCode: 8270S_SIMP	Units: µg/Kg	Prep Date: 7/28/2008	RunNo: 14356	
Client ID: ZZZZZ	Batch ID: 7862	Method: SW8270C	(SW3550B)	Analysis Date: 7/30/2008	SeqNo: 376536	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df				

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	304	7.0	333	0	91	30	111				
Acenaphthene	330	7.0	333	0	99	28	110				
Acenaphthylene	339	7.0	333	0	102	23	126				
Anthracene	338	7.0	333	0	101	28	136				
Benzo[a]anthracene	312	7.0	333	0	94	31	146				
Benzo[a]pyrene	388	7.0	333	0	117	28	128				
Benzo[b]fluoranthene	400	7.0	333	0	120	30	139				
Benzo[g,h,i]perylene	429	7.0	333	0	129	21	149				
Benzo[k]fluoranthene	380	7.0	333	0	114	42	129				
Chrysene	322	7.0	333	0	97	39	134				
Dibenz[a,h]anthracene	409	7.0	333	0	123	30	138				
Fluoranthene	339	7.0	333	0	102	30	142				
Fluorene	345	7.0	333	0	104	27	116				
Indeno[1,2,3-cd]pyrene	416	7.0	333	0	125	17	164				
Naphthalene	350	7.0	333	0	105	29	106				
Phenanthrene	330	7.0	333	0	99	32	127				
Pyrene	331	7.0	333	0	99	28	130				
Surr: Terphenyl-d14	288	0	333	0	86	14	129				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200

East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C

Work Order: 0807110

Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: LCSD-7862	SampType: LCSD	TestCode: 8270S_SIMP	Units: µg/Kg	Prep Date: 7/28/2008	RunNo: 14356	
Client ID: ZZZZZ	Batch ID: 7862	Method: SW8270C	(SW3550B)	Analysis Date: 7/30/2008	SeqNo: 376537	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df				

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	313	7.0	333	0	94	30	111	304	3.1	50	
Acenaphthene	341	7.0	333	0	102	28	110	330	3.3	50	
Acenaphthylene	340	7.0	333	0	102	23	126	339	0.2	50	
Anthracene	335	7.0	333	0	100	28	136	338	0.9	50	
Benzo[a]anthracene	284	7.0	333	0	85	31	146	312	9.4	50	
Benzo[a]pyrene	398	7.0	333	0	119	28	128	388	2.4	50	
Benzo[b]fluoranthene	419	7.0	333	0	126	30	139	400	4.6	50	
Benzo[g,h,i]perylene	455	7.0	333	0	137	21	149	429	6.0	50	
Benzo[k]fluoranthene	393	7.0	333	0	118	42	129	380	3.3	50	
Chrysene	292	7.0	333	0	88	39	134	322	9.7	50	
Dibenz[a,h]anthracene	424	7.0	333	0	127	30	138	409	3.5	50	
Fluoranthene	329	7.0	333	0	99	30	142	339	3.1	50	
Fluorene	354	7.0	333	0	106	27	116	345	2.6	50	
Indeno[1,2,3-cd]pyrene	432	7.0	333	0	130	17	164	416	3.8	50	
Naphthalene	362	7.0	333	0	109	29	106	350	3.5	50	S
Phenanthrene	333	7.0	333	0	100	32	127	330	1.2	50	
Pyrene	327	7.0	333	0	98	28	130	331	1.2	50	
Surr: Terphenyl-d14	271	0	333	0	81	14	129	0		0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

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ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: MB-7858	SampType: MBLK	TestCode: 8270W_SIMP	Units: µg/L	Prep Date: 7/28/2008	RunNo: 14356
Client ID: ZZZZZ	Batch ID: 7858	Method: SW8270C	(SW3520C)	Analysis Date: 7/30/2008	SeqNo: 376538
Instrument: MS05_26	ColumnID: DB-5MS		ZB-5, 0.5 df		

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	ND	0.200									
Acenaphthene	ND	0.200									
Acenaphthylene	ND	0.200									
Anthracene	ND	0.200									
Benzo[a]anthracene	ND	0.200									
Benzo[a]pyrene	ND	0.200									
Benzo[b]fluoranthene	ND	0.200									
Benzo[g,h,i]perylene	ND	0.200									
Benzo[k]fluoranthene	ND	0.200									
Chrysene	ND	0.200									
Dibenz[a,h]anthracene	ND	0.200									
Fluoranthene	ND	0.200									
Fluorene	ND	0.200									
Indeno[1,2,3-cd]pyrene	ND	0.200									
Naphthalene	ND	0.200									
Phenanthrene	ND	0.200									
Pyrene	ND	0.200									
Surr: Terphenyl-d14	8.28	0	10	0	83	51	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value exceeds the instrument calibration range	J	Analyte detected below the PQL
ND	Not Detected at the Practical Quantitation Limit (PQL)	R	RPD exceeds accepted precision limit	S	Spike Recovery outside accepted recovery limits
U	Not Detected at the MDC or RL				

Date: *01-Aug-08*

Life Science Laboratories, Inc.

5000 Brittonfield Parkway, Suite 200
East Syracuse, NY 13057 (315) 437-0200

ANALYTICAL QC SUMMARY REPORT

Method: SW8270C
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: MB-7862	SampType: MBLK	TestCode: 8270S_SIMP	Units: µg/Kg	Prep Date: 7/28/2008		RunNo: 14356	
Client ID: ZZZZZ	Batch ID: 7862	Method: SW8270C	(SW3550B)	Analysis Date: 7/30/2008		SeqNo: 376535	
Instrument: MS05_26	ColumnID: DB-5MS	ZB-5, 0.5 df					

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Methylnaphthalene	ND	7.0									
Acenaphthene	ND	7.0									
Acenaphthylene	ND	7.0									
Anthracene	ND	7.0									
Benzo[a]anthracene	ND	7.0									
Benzo[a]pyrene	ND	7.0									
Benzo[b]fluoranthene	ND	7.0									
Benzo[g,h,i]perylene	ND	7.0									
Benzo[k]fluoranthene	ND	7.0									
Chrysene	ND	7.0									
Dibenz[a,h]anthracene	ND	7.0									
Fluoranthene	ND	7.0									
Fluorene	ND	7.0									
Indeno[1,2,3-cd]pyrene	ND	7.0									
Naphthalene	ND	7.0									
Phenanthrene	ND	7.0									
Pyrene	ND	7.0									
Surr: Terphenyl-d14	275	0	333	0	82	14	129				

Qualifiers:
- B Analyte detected in the associated Method Blank
- ND Not Detected at the Practical Quantitation Limit (PQL)
- U Not Detected at the MDC or RL
- E Value exceeds the instrument calibration range
- R RPD exceeds accepted precision limit
- J Analyte detected below the PQL
- S Spike Recovery outside accepted recovery limits

Date: *01-Aug-08*

Date: *08-Aug-08*

Life Science Laboratories, Inc.

CLIENT: O'Brien & Gere Engineers, Inc
Lab Order: 0807110
Project: BAE Northfolk Ship Repair

Sample ID	Lab ID	Units	Date Collected	Date Received	Date Analyzed	Batch ID	Percent Moisture
SB-111-01-SL01	0807110-001A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	14.8
SB-111-02-SL01	0807110-002A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	16.1
SB-114-01-SL01	0807110-003A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	14.5
SB-114-02-SL01	0807110-004A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	12.6
SB-105-01-SL01	0807110-005A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	17.1
SB-105-02-SL01	0807110-006A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	16.4
SB-111-51-SL01	0807110-007A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	16.9
SB-111-03-SL01	0807110-008A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	20.8
SB-111-04-SL01	0807110-009A	wt%	7/22/2008	7/24/2008	7/24/2008	R14297	17.2

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ANALYTICAL QC SUMMARY REPORT

Method: SM 2540 G
Work Order: 0807110
Project: BAE Northfolk Ship Repair

CLIENT: O'Brien & Gere Engineers, Inc

Sample ID: 0807110-002ADUP	SampType: DUP	TestCode: PMOIST	Units: wt%	Prep Date:		RunNo: 14297	
Client ID: SB-111-02-SL01	Batch ID: R14297	Method: SM 2540 G		Analysis Date: 7/24/2008		SeqNo: 375791	
Instrument:	ColumnID:						

Analyte	QC Sample Result	PQL	SPK Added	Parent Sample Result	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	16.6	1.00						16.1	3.1	10	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Practical Quantitation Limit (PQL)
- U Not Detected at the MDC or RL
- E Value exceeds the instrument calibration range
- R RPD exceeds accepted precision limit
- J Analyte detected below the PQL
- S Spike Recovery outside accepted recovery limits

Date: *08-Aug-08*